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ABSTRACT

These proceedings contain 20 presentations and reports made during the 30th Annual Research Conference in Agricultural Education in Lubbock, Texas. The keynote address on importance of research to agricultural education is followed by 16 research papers reporting on analysis of student teacher morale before and after student teaching; identification of emerging occupations in vocational agriculture; comparison of job analysis techniques; relationships between program evaluation statements and respondent demographic characteristics; association of selected characteristics with average net income from supervised project programs of production agriculture students; assessment of agricultural mechanics safety instruction in agricultural teacher education programs; followup of agricultural education graduates; pilot study of telecasette energy information service; development of computer-based program to show longitudinal trends of teacher and program characteristics in vocational agriculture; wheat producers' awareness, attitudes, and practices concerning integrated pest management and production problems; teachers' reactions to and use of nursery operations materials; vocational agriculture teachers' attitudes to students' college selection; vocational agriculture instructor's role as community agriculture leader; factors affecting student attrition in production vocational agriculture programs; reader perceptions of agricultural education leadership newsletter; and influence of verbal and nonverbal communication on teaching effectiveness. Three addresses concern integrating teaching and research, determining sample size, and grantsmanship. (YLB)

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SOUTHERN RESEARCH CONFERENCE
IN AGRICULTURAL EDUCATION

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PROCEEDINGS
of the
30th Annual

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SOUTHERN RESEARCH CONFERENCE IN AGRICULTURAL EDUCATION

TEXAS TECH UNIVERSITY

DEPARTMENT OF AGRICULTURAL EDUCATION

JULY 21-23,1981

PROCEEDINGS

30th

SOUTHERN RESEARCH CONFERENCE

in

AGRICULTURAL EDUCATION

July 21 - 23, 1981
TEXAS TECH UNIVERSITY
LUBBOCK, TEXAS

Prepared by

M. J. Cepica, Conference Chairman
Ira Dickerson, Chairman-Elect
Larry R. Jewell, Conference Secretary

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PROGRAM

30th ANNUAL
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July 21-23, 1981

Texas Tech University
Lubbock, Texas

Monday, July 20, 1981

7:00 - 9:00 p.m. Registration (Lubbock Inn)

Tuesday, July 21, 1981

8:30 a.m. Registration (Texas Tech University - Green Room)

FIRST GENERAL SESSION

Chairman -- M. J. Cepica, Texas Tech University

Secretary-Recorder -- Larry R. Jewell North Carolina State University

Chairman Elect -- Ira Dickerson, University of Georgia

9:00 a.m. WELCOME -- Jerry Stockton, Chairperson, Department of Agricultural Education, Texas Tech University

CONFERENCE PLANS -- M. J. Cepica, Department of Agricultural Education, Texas Tech University

KEYNOTE ADDRESS -- "Importance of Research to Agricultural Education", Dr. Samuel E. Curl, Dean, College of Agricultural Sciences, Texas Tech University

9:45 a.m. PRESENTATION OF RESEARCH PAPER

Analysis of Student Teacher Morale Before and After Student Teaching -- Ben L. Byler and Linda F. Byler, Mississippi State University

10:15 a.m. REFRESHMENT BREAK

10:30 a.m. PRESENTATION OF RESEARCH PAPERS

Identification of Emerging Occupations in Vocational Agriculture--John E. Carnes, Texas A&M University

A Comparison of Two Job Analysis Techniques -- Michael F. Burnett, Louisiana State University and J. David McCracken, Ohio State University

11:45 a.m. LUNCH

SECOND GENERAL SESSION

Presider -- Charles W. Smith, Louisiana State University

1:15 p.m. PRESENTATION OF RESEARCH PAPERS

Relationships Between Program Evaluation Statements and Demographic Characteristics of Respondents in a Southern Region Study of Vocational Agriculture/Agribusiness Education Graduates From 1974 -- Maynard J. Iverson and Paul D. Davis, Auburn University, Ronald A. Brown, Mississippi State University, and Larry R. Jewell, North Carolina State University

The Association of Selected Characteristics with the Average Net Income From Supervised Project Programs of Production Agriculture Students in Texas High Schools -- John M. Dillingham, Texas Tech University

2:45 p.m. REFRESHMENT BREAK

3:00 p.m. PRESENTATION OF RESEARCH PAPER

An Assessment of Agricultural Mechanics Safety Instruction Conducted at Agricultural Teacher Education Programs Across the United States -- Steve Forsythe and Robert Terry, Oklahoma State University

3:30 p.m. TOUR -- Lubbock Feedlot & Roosevelt High School vocational agriculture department

Wednesday, July 22, 1981

Texas Tech University Ranching Heritage Center - Hereford Room

THIRD GENERAL SESSION

Presider -- Lewis Eggenberger, Texas Tech University

8:30 a.m. PRESENTATION OF RESEARCH PAPERS

Follow-up of Agricultural Education Graduates from Texas A&M University for the years 1972-1975 -- Jeffrey W. Moss, Texas A&M University

Extension Energy Tips: A Pilot Study of a Telecasette Energy Information Service -- Cynthia L. Sheffield, University of Florida

The Development of a Computer-Based Program to Show Longitudinal Trends of Teacher and Program Characteristics in Vocational Agriculture -- Texton R. Miller, North Carolina State University

10:00 a.m. REFRESHMENT BREAK

10:15 a.m. ADDRESS: Integrating Teaching & Research -- Dr. Bob Albin, Associate Dean in Charge of Research, College of Agricultural Sciences, Texas Tech University

10:45 a.m. PRESENTATION OF RESEARCH PAPERS

Wheat Producers' Awareness, Attitudes and Practices Concerning Integrated Pest Management and Production Problems in a Four-County Area of Oklahoma -- Eddy Finley and James P. Key, Oklahoma State University

Teachers' Reactions to and Utilization of the Nursery Operations Materials -- Thomas L. Curry, Texas A&M University and Jimmy G. Cheek, University of Florida

11:45 a.m. TOUR -- Ranching Heritage Center, Picnic Lunch

FOURTH GENERAL SESSION

Presider - Joe Kotrlik, Louisiana State University

1:30 p.m. PRESENTATION OF RESEARCH PAPERS

Determining Vocational Agriculture Teacher's Attitudes With Regard to Their High School Students' Selection of a College of Agricultural Sciences -- Jerry Stockton, Texas Tech University

The Role of the Vocational Agriculture Instructor as a Community Leader of Agriculture -- Ben L. Byler, Mississippi State University

Factors Affecting Attrition in Production Vocational Agriculture Programs of Texas -- Dennis C. Pate and M. J. Cepica, Texas Tech University

3:00 p.m. REFRESHMENT BREAK

3:15 p.m. PRESENTATION OF RESEARCH REPORT

Reader Perceptions of the Agricultural Education Leadership Newsletter as a Communication Medium -- Blannie E. Bowen, Mississippi State University

The Influence of Verbal and Nonverbal Communication on Teaching Effectiveness -- John Hillison, Virginia Tech

6:30 p.m. FAMILY PICNIC - Maxey Park

Thursday, July 23, 1981

Texas Tech University Center - Green Room

FIFTH GENERAL SESSION

Presider - Earl Webb, Texas A&M University

8:30 a.m. "Determining the Sample Size: A Recurring Problem in Agricultural Education Research" -- J. Dale Oliver and Dennis E. Hinkle, Virginia Tech

"Grantsmanship", -- Don Herring, Texas A&M University; Jim Key, Oklahoma State University; Jimmy Cheek, University of Florida and Ronald Brown, Mississippi State University

10:00 a.m. BREAK -- Tour - Department of Agricultural Education

10:30 a.m. REPORT FROM STATES -- Research in Progess

11:00 a.m. BUSINESS SESSION -- Co-presiders: Larry Jewell and M. J. Cepica

PRESENTATIONS AND REPORTS

First Session

WELCOME

With your permission, I will call the 1981 Southern Research Conference in Agricultural Education into session.

I am Jerry Stockton, and we wish to welcome you to the campus of Texas Tech University. We have a beautiful campus with a Fall semester enrollment of 23,043. Of that figure, 1,563 are majors in the College of Agricultural Sciences which include the departments of Agricultural Economics, Agricultural Education, Animal Science, Agricultural Engineering, Plant and Soil Sciences, Range and Wildlife Management, Park Administration and Landscape Architecture.

Lubbock is located in the heart of the Texas plains area with a population of 170,000. Lubbock's crops include cotton, milo, corn, soybeans, sorghum, and vegetables. We are primarily an irrigated farming area with cattle, hogs, and sheep concentrated in high numbers.

We hope to make you comfortable while you are with us. We will try to help you with anything other than money problems. The packets you received when you registered consist of goodies and lots of information regarding Lubbock.

Dr. Cepica has an excellent program planned and he will be assisted by Dr. Dillingham and Dr. Eggenberger as well as our graduate assistants Dennis Pate, Rodney Purswell and Keith Krug.

Agricultural Education is housed in the College of Agricultural Sciences and is strongly supported by the administration -- Dean Sam Curl, Bob Albin, W. F. Bennett, and J. Wayland Bennett.

We look forward to your three day visit with us and we again extend to you a warm Texas welcome to Texas Tech University.

Welcome address presented by Jerry Stockton to the Southern Agricultural Education Research Conference at Texas Tech University, Lubbock, July 21, 1981.

IMPORTANCE OF RESEARCH TO AGRICULTURAL EDUCATION

Sam E. Curl
Dean, College of Agricultural Sciences
Texas Tech University
Lubbock, Texas

Welcome to Texas Tech! It is great to have you on campus and we hope your stay with us is both enjoyable and educational. It is a personal pleasure for me to be here with you this morning, and I am honored to have been asked to be the "keynoter" for your annual Research Conference.

My experiences as an active FFA member in high school and college, as a teacher and researcher, and now as administrator concerned with the success of the Agricultural Education program at Texas Tech, have been rewarding, invigorating, and challenging! And it is those same kinds of feelings that I want to hold up before you today as characteristics of well-designed research in Agricultural Education.

Through the years, both as a scientist and as an administrator, I have found research to be intriguing, thought-provoking, and extremely rewarding. Research and teaching go hand in hand in the academic community; one activity complements the other. And yet, I have observed for years that some faculty members tend to view research as drudgery, as something one "has to do" in order to receive tenure or promotion, as some type of activity that takes place in a somewhat foggy, ambiguous, and not-well understood setting that seems to lead nowhere. I want to share with you this morning some general thoughts about research and its importance.

A personal acquaintance of mine defines research simply as "planned inquiry." It has been said that "to not plan a course of action is to plan to have no course of action." K. S. Popper, a noted scientist in the early 1900's, likened research to a spiral stairway, with each planned, completed, and published research project being one complete turn around the spiral staircase. This analogy includes several noteworthy points:

1. The stairway begins at a known point and leads to a definite destination. A planned research project should follow the same pattern. The importance of carefully planning and designing that staircase before you begin to walk on it cannot be over-emphasized.
2. The stairway, even though circular and not in a straight line, winds from its point of origin to its destination in a generally straight line. Although our progression toward the top of the staircase includes some lateral movement, or exploration, if you will, we continue to advance methodically toward our ultimate goal. Our research projects should likewise carry out the original objectives and not falter or change direction in the middle of the investigation.
3. Each spiral ring completed on the staircase, like each completed research objective, leads to a new assessment of the problem and acts as a foundation from which to begin another step toward discovery of answers to new questions.
4. Each completed spiral or completed research project results in a greater approximation of truth than that which previously existed.

Keynote address presented to the Southern Agricultural Education Research Conference at Texas Tech University, Lubbock, July 21, 1981.

> And that's the real essence--the real excitement--of research--to discover truth. The degree of precision and accuracy that we employ in our research techniques will determine how closely we "approximate the truth." I could go on, but the point made is that planning and design is the initial, essential ingredient for sound, meaningful research.

The field of agricultural education is obviously not immune to the challenge of relying on a sound, productive research program as a source of new information and approaches to the solution of challenges to be faced in the 80's. The importance of research in agricultural education justifies our greatest concentration and effort. Projections indicate that we can be assured of continued, constant change during the 80's. This shouldn't cause us undue concern because the agriculturalindustry is experiencing today, and has always experienced just that, constant change! Some analysts project that the decade of the 80's will be an era of tumultuous changes in the agricultural industry. Other say that due to inflation, interest rates, and costs of energy and transportation, we will face a crisis of gradually drying up, of choking down, and by the end of the decade, reaching a point of stagnation. The latter scenario is one which we as professional agriculturalists cannot allow to happen, and the key to keeping our educational programs in vocational agriculture viable is a sound, productive research base. Without some new technologies, i. e., those related to energy efficiency, we face some perilous days ahead in agricultural productivity. There must be some substantial advancements and redirections as we usher in a whole new era in the food and agricultural sciences. You are the individuals who must continue forgoing ahead with new developments in agricultural education through research. You are among those who will be leading us upward on that spiral stairway of new knowledge and clearer approximations of truth through well-planned, sound research.

In reading some of the reports in the literature regarding vocational education in general and vocational agriculture specifically, I found that many of the writers were listing similar topics as being most appropriate for future research. Some of the fertile areas for future research are: employment opportunities, manpower needs, in-service education, basic skills attainment, special needs populations, development of research funding, equity and accessibility for all races and both sexes, wage differentials, curriculum development, evaluation methods, experiential learning techniques, and leadership development.

In assessment of the profession of agricultural education I cannot disagree with any one of the previously stated research areas. However, it is my judgment that the two most crucial areas for agricultural educators to research--to explore and develop--are a) techniques for acquiring greater research funding and b) the area of communication!

The fuel that generates research is money. Funding for research in agricultural education, as all of you are well aware, is low and inadequate. There exists a tremendous need to increase the activity in seeking funds for agricultural education research and, at the same time, to determine the best techniques to use in approaching specific sources/agencies. This whole area is under-developed, and agricultural education research can make great strides by concentrating on seeking out, generating specific techniques and procedures, and securing commitments for funded research. I know that much has been said about grantsmanship, and justifiably so! My point here is to highlight one ingredient of grantsmanship--the seeking out of a potential funding source and determining the optimum, specific technique to use in approaching that source. This is a crucial, vital research area in itself. It is closely linked to the second major area that I think is a very important one for your future investigation--the area of agricultural communications.

I'm thinking of the research area of communication as being that area relating to the transfer of knowledge. How can we improve the transfer of knowledge in the classroom; in one-on-one situations; in counseling; in working with Young Farmer groups; in working with the public in general; in working with your administrators; in working with your colleagues in other departments: in working with state and federal legislators--and the list goes on and on. We have a tremendous story to tell. Are we doing a first-rate job of telling it? Of getting our point across? I think not. Surely we can do a better job that we have done and are now doing. The future rests largely upon you and upon all of us who represent the field of agriculture. We must all be better salesmen for agriculture! The answer is that through research/planned inquiry, new approximations of the truth will be discovered and the transfer of knowledge, communication, will improve.

ANALYSIS OF STUDENT TEACHER MORALE BEFORE AND AFTER STUDENT TEACHING

Ben L. Byler
Professor, Department of Agricultural and Extension Education, and
Coordinator, Faculty Development Center
Mississippi State University, Mississippi State, MS

and
Linda F. Byler
Doctoral Graduate in Secondary Education
Mississippi State University, Mississippi State, MS

INTRODUCTION/NEED FOR THE STUDY

The experience called student teaching has been an important segment in the curriculum of teacher education programs in the United States since 1823, when Samuel Hall established the first teacher-training institution in Concord, Vermont. Although many changes have been made in student teaching programs since their establishment, the importance attached to student teaching programs is evidenced by the continued changes and emphasis placed on this field experience.

Because of the nature and importance attached to student teaching, it is important to investigate what goes on during this crucial period of time. There have been studies related to personality, job satisfaction, and attitudes of student teachers and cooperating teachers. However, there have been few studies related to student teacher morale, especially as it relates to their cooperating teacher's morale. There are various factors which may contribute to the morale of both the student teacher and the cooperating teacher.

OBJECTIVES OF THE STUDY

Statement of the Problem

The purpose of this study was to determine if there is a significant difference in the morale of student teachers before and after the student teaching experience. Related purposes were to determine if selected personal and situation variables, and the morale of their cooperating teachers are related to any change in the student teacher's morale; and whether there are significant differences in the morale of student teachers and their cooperating teachers grouped by program area.

Hypotheses

The null hypotheses were as follows:

1. There will be no difference between the morale of student teachers before and after the student teaching experience as measured by the nine factors on the Purdue Student Teacher Opinionaire.

2. There will be no difference between the morale of student teachers before and after the student teaching experience as measured by

the total scores on the Purdue Student Teacher Opinionaire.

3. There will be no correlation between selected personal variables and the morale of student teachers before the student teaching experience as measured by the total scores on the Purdue Student Teacher Opinionaire.

4. There will be no correlation between personal and situational variables and the morale of student teachers after the student teaching experience as measured by the total scores on the Purdue Student Teacher Opinionaire.

5. There will be no correlation between the morale of student teachers and the morale of their cooperating teachers as measured by the total pretest scores on the Purdue Student Teacher Opinionaire and the total scores on the Purdue Teacher Opinionaire.

6. There will be no correlation between the morale of student teachers and the morale of their cooperating teachers as measured by the pretest scores on the nine factors of the Purdue Student Teacher Opinionaire and the morale of their cooperating teachers as measured by the ten factors on the Purdue Teacher Opinionaire.

7. There will be no correlation between the morale of student teachers as measured by the total posttest scores on the Purdue Student Teacher Opinionaire and the morale of their cooperating teachers as measured by the total scores on the Purdue Teacher Opinionaire.

8. There will be no correlation between the morale of student teachers as measured by the posttest scores on the nine factors of the Purdue Student Teacher Opinionaire and the morale of their cooperating teachers as measured by the ten factors of the Purdue Teacher Opinionaire.

9. There will be no difference in the morale before the student teaching experience among student teachers grouped according to major teaching fields as measured by the nine factors on the Purdue Student Teacher Opinionaire.

10. There will be no difference in the morale after the student teaching experience among student teachers grouped according to major teaching field as measured by the nine factors on the Purdue Student Teacher Opinionaire.

11. There will be no difference in the morale before the student teaching experience among student teachers grouped according to major teaching field as measured by the total pretest scores on the Purdue Student Teacher Opinionaire.

12. There will be no difference in the morale after the student teaching experience among student teachers grouped according to major teaching field as measured by the total posttest scores on the Purdue Student Teacher Opinionaire.

13. There will be no difference in the morale of the cooperating teachers when grouped according to major teaching field as measured by the total scores on the Purdue Teacher Opinionaire.

14. There will be no difference in the morale of the cooperating teachers when grouped according to major teaching field as measured by the scores on the ten factors on the Purdue Teacher Opinionaire.

METHODS AND PROCEDURES

Data were collected from student teachers in the College of Education during the Fall Semester, 1980, at Mississippi State University, and their cooperating teachers who would agree to participate in the study. The College of Education consists of: elementary education, secondary education, special education, physical education, agricultural education, business education, home economics education, and industrial arts education. The sample consisted of 155 student teachers and 136 cooperating teachers.

The Personal Data Questionnaire and the Purdue Student Teacher Opinionaire (PSTO) were administered to the student teacher participants approximately six weeks before they left campus to participate in the student teaching experience. The Situation Questionnaire and the PSTO were mailed to the student teachers approximately two weeks before they completed student teaching. The cooperating teachers were mailed the Purdue Teacher Opinionaire (PTO) approximately two weeks before the student teachers had completed the student teaching experience.

RESULTS: FINDINGS, CONCLUSIONS, RECOMMENDATIONS

The statistical analysis of the data to test the hypotheses consisted of the use of the following statistics: correlated t-test, multiple regression, Pearson product-moment correlation, canonical correlation, and one-way analysis of variance. The .05 level of significance was established for the rejection of each hypothesis.

1. Student teachers had significantly more positive morale scores between pre and posttest measures on the PSTO factors: "rapport with supervising teacher," "rapport with principal," "teaching as a profession," "school facilities and services," "rapport with students," "rapport with other teachers," and "student teacher load." Therefore, teacher educators concerned with affecting the direction of student teacher morale should consider the factors which resulted in less positive scores, and plan programs accordingly.

2. There was a significant positive change in student teachers' total morale scores between pre and posttest measures.

3. The most significant predictors of the student teachers' total pretest morale scores were early experience programs related to education and the student teachers' role expectations in the school setting where they planned to student teach. Therefore, students in teacher education should have an opportunity to participate in more educational experiences prior to student teaching. This might also give them a more realistic idea as to what their future role as a student teacher would be.

4. The most significant predictors of total posttest morale scores for the student teachers were: total PSTO pretest scores, cooperating

teacher's desire to work with the student teacher, occupational plans after the student teaching experience, student teacher's acceptance as a professional educator by the cooperating teacher and other school personnel, and cooperating teacher's effectiveness as a classroom teacher. Since most of these variables deal with the cooperating teacher, programs sould be provided to assist cooperating teachers in their role of supervising the student teacher.

5. There was not a significant relationship between student teachers' total pretest morale scores and their cooperating teachers' morale scores.

6. There was not a significant relationship between the factors of student teachers' pretest morale scores and the factors of their cooperating teachers' morale scores.

7. There was a significant relationship between student teachers' total morale scores on the PSTO after the student teaching experience and their cooperating teachers' morale scores on the PTO.

8. There were three significant canonical relationships between the factors of the student teachers' morale scores on the PSTO after the student teaching experience and the factors of their cooperating teachers' morale scores on the PTO. The first canonical root was yielded when student teachers scored negatively on the factors, "teaching as a profession" and "rapport with other teachers;" when their cooperating teachers scored positively on the factor, "teacher rapport with principal," and negatively on "rapport among teachers" and "community pressures."

The second canonical root revealed that student teachers scored positively to the factors, "student teacher load" and "rapport with students," and negatively to the factors, "rapport with supervising teacher," "teaching as a profession," and "professional preparation;" when their cooperating teachers scored positively to the factors, "teacher salary," "teacher load," and "satisfaction with teaching," and negatively to "rapport among teachers" and "teacher status."

The third significant canonical root revealed that student teachers scored positively to the factor, "teaching as a profession" and negatively to the factor, "rapport with other teachers," when their cooperating teachers scored positively on the factors, "teacher status" and "school facilities and services," and negatively on the factors, "teacher rapport with principal," "rapport among teachers," and "teacher salary." Therefore, more consideration needs to be given to the area of cooperating teacher selection, since the cooperating teacher seems to have the most influence on the development of negative student teacher morale.

9. There was not a significant difference in the morale scores on the nine factors on the PSTO before the student teaching experience among student teachers grouped according to major teaching field.

10. There was not a significant difference in the morale scores on the total scores on the PSTO before the student teaching experience among student teachers grouped according to major teaching field.

11. There was a significant difference in the morale scores on one of the nine factors on the PSTO after the student teaching experience among student teachers grouped according to major teaching field.

Agricultural education student teachers had significantly lower mean scores than did student teachers in; elementary education, special education, industrial arts and business education on the factor dealing with "student teacher load."

Since agricultural education student teachers had the lowest mean number of years of experience related to education of any of the eight groups, more educational experience prior to student teaching might give them a more realistic view of the vo-ag teacher's work load.

12. There was not a significant difference in the morale scores on the PSTO after the student teaching experience among student teachers grouped according to major teaching field on the total posttest morale scores.

13. There was not a significant difference in the total morale scores on the PTO for the cooperating teachers when grouped according to major teaching field.

14. The cooperating teacher morale scores for elementary education were significantly greater than the scores for agricultural education for the factor "teacher load." The elementary education cooperating teachers also scored significantly higher on the factor dealing with "school facilities" and services than did secondary cooperating teachers.

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IDENTIFICATION OF EMERGING OCCUPATIONS IN VOCATIONAL AGRICULTURE*

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INTRODUCTION

During the past 170 years, U.S. agriculture has evolved from a self-contained industry to a group of industries bound by a common function: providing food and fiber. Prior to agricultural mechanization, the manufacturing of farm supplies and equipment and the storing, processing and marketing of farm products occurred on the farm. As these operations became more complex, farmers found support in segments of other industries that specialized in particular aspects of agriculture. The function of agriculture was no longer contained in a single industry. Rather, an assortment of businesses representing several industries contributed in providing agricultural products to consumers (Davis, 1957) (Cooper, 1981).

Regardless of industry location, businesses involved in the supply of food and fiber contain jobs that require competence in agriculture (Economic Research Service, 1974). Unfortunately, identifying agricultural occupations in these industries is difficult using "conventional" manpower information. The U.S. Department of Labor job classification system and subsequent labor demand statistics provide a misleading picture of agricultural employment (Economic Research and Analysis Division, 1977) (Employment and Training Administration, 1979). Only jobs directly related to production agriculture are attributed to agricultural industry (Employment and Training Administration, 1977). Such information may lead agricultural educators to overlook occupations that require agricultural training.

Rapid growth of the Texas economy and of new technologies during the past decade has caused a realignment of career opportunities in agriculture. The trend in production agriculture has been toward larger units with fewer workers. Smaller, often part-time farms have offset this trend slightly (Bureau of the Census, 1980). Even more important in terms of training requirements has been a continued growth in the need for workers in agricultural services, processing, marketing and manufacturing occupations. Such jobs are normally located off the farm yet require agricultural skills and knowledge (Bureau of Labor Statistics, 1980).

This redirection of agriculture/agribusiness jobs and an absence of reliable employment data have made decision-making difficult for individuals charged with determining current agricultural training needs. Agricultural educators could use information about current and emerging agricultural occupations to (1) evaluate existing programs, (2) develop timely curriculum materials, (3) insure an adequate supply of agriculture/agribusiness workers, (4) provide career counseling to students, and (5) recruit students.

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OBJECTIVES OF THE STUDY

To supply agricultural educators with information about the agricultural labor market, this study addressed the following objectives:

1. To identify entry level agricultural job titles in which "high" potential exists for employment of vocational agriculture graduates.

2. To identify emerging agricultural occupations. Emerging occupations are jobs in which employment potential exists but placement activity has been relatively limited.

3. To compare the perceptions of agricultural employers toward the skill and knowledge areas most important to a beginning employee's success with the perceptions of vocational agriculture teachers toward the skill and knowledge areas most important to vocational agriculture.

METHODS

A list of entry-level agriculture/agribusiness job titles and a list of vocational agriculture skill and knowledge areas were developed through a review of the literature and personal interviews. Federal and state agency publications, reports of previous research, and curriculum materials were reviewed extensively for job titles and skill and knowledge areas with application to agriculture in Texas. Interviews with employers, state education agency personnel, curriculum specialists and vocational agriculture teachers provided additional job titles and competencies. Lists of 633 entry level job titles and 33 skill and knowledge areas resulted.

The job titles and skill and knowledge areas were incorporated into survey documents for agricultural firms and vocational agriculture teachers. Respondents to the business survey were asked to indicate (1) job titles that existed in their business (Existing Jobs), (2) job titles for which they would consider hiring an entry level employee trained in vocational agriculture (Would Hire), (3) the ten skill and knowledge areas most important to a beginning employee's success in their organization. Teachers were requested to indicate job titles in which they had placed a student in the past three years (Placements) and ten skill and knowledge areas they considered most important.

State education agency staff, curriculum specialists and project personnel chose the types of businesses to be sampled. Businesses were categorized by the Standard Industrial Classification (SIC) Manual (Statistical Policy Division, 1972). The selection of SICs was based on those types of businesses identified by the Economic Research Service as utilizing agricultural competencies (1974). A list of 22,604 agribusinesses and another containing 4,544 production agriculture firms were secured, and a stratified random sampling procedure was used to select 1650 agribusinesses and 350 production agriculture units. All vocational agriculture teachers in Texas (1600) were included in the study.

The survey instruments were field tested through personal interviews with employers and teachers. Appropriate modifications were made and the revised survey forms were printed and mailed. A follow-up plan was devised to increase the return rate. A series of letters advised respondents of the study. Teacher response was encouraged in the state vocational agriculture teachers association newsletter. Also, the zip codes of schools and businesses were matched, and teachers were sent a list of sample businesses in their area. Teachers then contacted employers to request their response. There were 245 usable returns from businesses and 751 from teachers. Each returned survey was checked to ensure that it was properly completed.

The basic analytic procedure used in the study was a modified version of the job analytic method in the Dictionary of Occupational Titles (Employment and Training Administration, 1977). Entry-level agricultural occupations with "high" potential for employment of vocational agriculture graduates were identified by Total Would Hire in a Job Title (TWHJT). TWHJT was calculated using the following formula:

$$\frac{\text{Number of Agricultural Businesses in Texas}}{\text{Number of Agricultural Businesses Responding}} \times \begin{array}{c}\text{Number of Agricultural}\\ \text{Businesses that Indicated}\\ \text{"Would Hire" in a Job Title}\end{array} = \text{TWHJT}$$

"Emerging Occupations" were identified by Potential Placement Status (PPS). PPS was calculated using the following formula:

$$\frac{\text{Total Placements}}{\text{Total Would Hire}} = \text{TPPR (Total Placement Potential Ratio)}$$

$$\frac{\text{Total Placements in a Job Title}}{\text{Total Would Hire in a Job Title}} = \text{PPR (Potential Placement Ratio)}$$

$$\text{PPR} - \text{TPPR} = \text{PPS}$$

The skill and knowledge areas were ranked in descending order by the frequency of response for the business and teacher samples.

RESULTS

Jobs with high potential for employment of vocational agriculture graduates are shown in Table 1. The figures (TWHJT) that appear to the right of the job titles are relative estimates of employment potential. TWHJT represents the projected number of employers in Texas who would consider hiring a vocational agriculture graduate rather than the actual number of positions available. Over 40 job titles had a TWHJT of 1,000 or more.

Table 2 shows jobs determined to be emerging. Potential for placement is high for emerging jobs in relation to the current placement of vocational agriculture graduates. Rapid changes in business trends and in new technology can cause the demand for workers in a job title to increase faster than the placement of graduates. Over 60 jobs were identified as emerging.

Table 1

JOBS IN WHICH "HIGH" POTENTIAL EXISTS FOR EMPLOYMENT OF VOCATIONAL AGRICULTURE GRADUATES

Job Title	Total Would Hire in A Job Title (TWHJT)
Farm Equipment Mechanic	4,654
Agricultural Welder	3,878
Farm Equipment Set-Up Mechanic	2,881
Small Engines Mechanics	2,881
Hydraulics Mechanic	2,659
Veterinary Assistant	2,547
Fertilizer Applicator	2,438
Agricultural Facilities Maintenance Worker	2,438
Agri-Chemical Applicator	2,327
Farm Machinery and Equipment Counter Person	2,327
Agricultural Equipment Operator	2,105
Diversified Crop and Livestock Farmhand	1,945
Field Crop Farmhand	1,945
Agri-Chemical Supply and Service Helper	1,945
Farm Machinery and Equipment Sales Person	1,884
Grain Farmhand	1,773
Groundskeeper	1,773
Nursery Worker	1,662

Table 2

EMERGING JOBS FOR VOCATIONAL AGRICULTURE GRADUATES

Job Title	Potential Placement Status (PPS)
Botanical Garden/Arboretum Worker	-.19129
Farm Machinery and Equipment Counter Person	-.19021
Smoke Jumper	-.18677
Horticultural Supply Clerk	-.18677
Zoning Compliance Officer	-.18677
Fisheries Technician	-.18677
Farm Machinery and Equipment Sales Person	-.18465
Agricultural Computer Worker	-.18253
Cream Separator's Assistant	-.17775
Agricultural Facilities Designer	-.17474
Seafood Butcher	-.16873
Hatchery Equipment Service Person	-.16873
Poultry Tankman	-.16873
Shactor's Assistant	-.16873
Air Pollution Control Inspector	-.16873
Cheese Blender's Assistant	-.16873
Honey Blender's Assistant	-.16873
Forest Insect Ranger	-.16873
Grain Clerk	-.16872

Table 3

THE RELATIVE IMPORTANCE OF VOCATIONAL AGRICULTURE SKILL AND KNOWLEDGE AREAS AS PERCEIVED BY AGRICULTURAL EMPLOYERS AND VOCATIONAL AGRICULTURE TEACHERS

Skill and Knowledge Area*	Employer Rank	Teacher Rank
Safety Practices	5.5	2
Using Leadership Skills	5.5	4
Metal Work	10	1
Use and Care of Tools	3.5	9
Record Keeping and Evaluation	9	7
Inter-Personal Job Skills	2	16
Repairing Ag Machinery and Equipment	7	11
Operation/Maintenance of Ag. Mach.	8	14
Animal Nutrition	20	5
Selecting Livestock	24.5	3
Caring for and "Working" Animals	22	6
Soil Evaluation	16	12
Controlling Animal Diseases/Parasites	19	10
Electricity	13	17
Plant Fertilization	12	19
Controlling Plant Pests	11	20
Using Business Practices	1	30
Carpentry	24.5	8
Farm/Ranch Management	15	18
Using Sales Techniques	3.5	31
Conserving Natural Resources	23	13
Energy Conservation	14	23.5
Selecting Seeds/Plants/Crops	17	21
Animal Reproduction	31	15
Plant Reproduction/Propagation	26.5	22
Irrigation Practices	18	32
Planning/Maintaining Livestock Facilities/Equip.	28	23.5
Environmental Protection	21	33
Processing Agricultural Products	26.5	28
Plumbing	30	26
Grading Agricultual Products	29	27
Concrete and Masonry	32.5	25
Surveying	32.5	29

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*Skill and knowledge areas are listed in rank order by combined employer and teacher responses.

Table 3 shows the relative importance of the skill and knowledge areas taught in vocational agriculture as perceived by agriculture/agribusiness employers and vocational agriculture teachers. Comparisons may be made between the responses of the two groups.

RECOMMENDATIONS

The information from this study has direct uses for teachers, instructional materials specialists, and education agency personnel. The data can be applied to the (1) recruitment and placement of students, (2) evaluation of existing curricula, (3) development of new instructional materials, and (4) prediction of program growth. Due to the viability of the agricultural job market in Texas, this information will soon be out of date. A survey methodology for future use by state education agency staff and vocational agriculture teachers in collecting new data and up-dating the current database is needed.

Also a manual of job descriptions, validated in Texas, for both emerging jobs and jobs with high placement potential should be developed. Teachers and students are concerned about the quality of jobs identified. Such factors as pay, working conditions, and general duties should be described for each job title.

Lastly, teachers need a diagnostic tool for use in evaluating individual jobs available in their program area. Factors relevant to job quality, placement and career potential should be considered quantifiably. Vocational counselors and teachers in other vocational programs would also benefit from such a tool.

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A COMPARISON OF TWO JOB ANALYSIS TECHNIQUES

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INTRODUCTION

The basic purpose of vocational education is the preparation of individuals for jobs. If these educational programs are to fulfill their basic purpose, there must be a clear relationship between the instruction and experiences that occur in vocational education classes and the activities that the prospective employee will be expected to undertake on the job.

For this relationship to be established, the specific activities associated with the job must first be identified. The technique used to secure and present information related to job activities is known as "job analysis".

Numerous techniques of job analysis are available. These techniques vary widely in their characteristics, procedures, and results. Two job analysis techniques, task inventory and Position Analysis Questionnaire (PAQ), will be examined and compared in this paper. Since techniques to differ, a comparison should prove useful in deciding which job analysis technique to employ for a specific purpose.

OBJECTIVES

The main purpose of this paper is to compare the procedures and results of two varying job analysis techniques. The specific objectives include:

(1) To compare characteristics of the task inventory and PAQ job analysis techniques.
(2) To compare the procedures involved in the use of the task inventory and PAQ job analysis techniques.
(3) To discuss the similarities and differences between the results of the task inventory and PAQ job analysis techniques when employed to analyze the same three agribusiness jobs.

PROCEDURE

A study was conducted in which three agribusiness occupations were analyzed using the two job analysis techniques, task inventory and Position Analysis Questionnaire.

Initially, a standard task inventory analysis was conducted for each of the three occupations. This analysis procedure is often referred to as the U. S. Air Force approach. It involves the use of questionnaires conatining the tasks associated with the job and the rating of these tasks on some predetermined scale.

Following the completion of the task inventory analyses, the same three agribusiness occupations were analyzed using the Position and Analysis Questionnaire (PAQ). The PAQ is a highly structured, standardized job analysis questionnaire that can be used in analyzing jobs of many different types. It consists of 194 job elements divided into six divisions entitled: (1) Information Input; (2) Mental Processes; (3) Work Output; (4) Relationships With Other Persons; (5) Job Context; and (6) Other Job Characteristics. The analysis is carried out by numerically rating the applicability of each job element to the position in question.

The paper focuses on the similarities and differences encountered by the researcher in conducting these two job analyses.

FINDINGS

Comparison of Process Characteristics

Task inventory analysis and Position Analysis Questionnaire analysis are widely differing techniques in terms of process characteristics. Six specific factors are used here for comparison.

Instant Usability

While both task inventories and the PAQ are operational in getting a job analysis completed, the PAQ has instant usability. To conduct a task inventory analysis, task lists must be developed and validated; scales must be selected; and questionnaires must be prepared. A PAQ analysis, on the other hand, requires no work prior to its use, except for the training of analysts to conduct the analysis.

Applicability to Various Occupations

The PAQ was designed to be applicable to virtually any occupation. Items are written in general terms so that they do not relate to any one occupation or group of occupations. Task inventories are also applicable to virtually any occupation. Whenever the tasks associated with an occupation can be identified, a task inventory analysis can be conducted.

Acceptability to Respondents and Users

The experience of this researcher during the course of data collection was that both task inventories and the PAQ were readily accepted by respondents. In all instances, refusals to participate in the study occurred before the prospective participant had knowledge of the job analysis technique to be used.

Required Job Analyst Training

The amount of analyst training required for each of the two analysis techniques differ somewhat. The PAQ is considerably more complex, and as such necessitates some more training. However, for both the task inventory and PAQ procedures, a thorough study of manuals, previously conducted studies, and other relevant literature along with practice in the use of the instrument would enable a researcher to successfully conduct job analyses by these two methods.

Sample Size Needed

The sample size required for a satisfactory task inventory analysis is considered to be moderate to high. Less than 25 respondents per analysis is inadequate, and frequently sample sizes range into the hundreds. The sample required for a successful PAQ analysis is very small. "It has been found through experience that three independent analysis of the same job/position have typically resulted in a satisfactory compromise between the cost of data collection and the reliability of the resulting data" (Mecham, pp. 5-6).

Reliability

Both task inventory and PAQ analysis techniques typically receive high reliability ratings. Reliability figures derived in this study ranged from .70 to .98 for task inventory instruments, and from .89 to .93 for PAQ analyses.

5

Comparison of Procedures

The job analyses conducted in this study are used as a basis for comparison of the procedures involved in the task inventory and PAQ techniques of job analysis. Four factors are used here for specific comparative discussion.

Instrumentation

Instrumentation for the task inventory analyses involved the development of the actual instruments. This development included first the construction of an initial task list for each occupation to be analyzed. Each initial task list was then validated through a review by three job incumbents.

Upon completion of the validation process, the data were summarized and appropriate changes were made in the inventory lists. The final task inventory questionnaires were then prepared as task lists with a seven-point Likert scale used to judge the degree of significance of each task.

In contrast to the task inventory analysis, the PAQ analysis instrumentation procedure involved only the selection of the standardized PAQ instrument and the orientation of the analyst to the PAQ.

Sampling

The sampling plans for the two analysis procedures were very similar. In both instances, the analysis began with a random sample of agribusinesses. Within the businesses selected, qualified employees were identified and asked to serve as respondents in the study. A difference appears in sampling at this point. For the task inventory analysis, all qualified employees were asked to respond, whereas in the PAQ analysis, only one employee per occupation was selected within a business. More than one occupation could be analyzed within an organization, but two or more employees in the same occupation were not selected within the same business.

Data Collection

The data collection for both job analysis techniques began with an initial telephone contact to the business manager. At this time an introduction to the study was presented and the needed cooperation was requested. Following this contact, the data collection for the two analyses varied considerably.

In the task inventory analysis, a personal visit was made to the cooperating business. On this visit a further explanation of the study was given, and any questions were answered. The researcher and the manager then identified those employees in the organization which met the criteria for participation. A brief meeting was arranged with each of the potential participants to distribute the instruments, provide a brief explanation of the study, and answer any questions.

The PAQ analysis also involved an initial personal visit to the business. On this visit, the researcher met with the manager to discuss the study in more detail and to identify the most appropriate job incumbent to include in the analysis.

The actual conduct of the PAQ analysis by the job analyst method could be divided into three phases: (1) Familiarity with the job -- initially the researcher met with the job incumbent to discuss the job in general and to become acquainted with the business operation. A familiarity with the job under analysis is very important in a PAQ analysis. (2) Observation of the worker -- following development of a familiarity with the job, the researcher spent a period of time observing the worker on the job. The time spent in observation ranged from approximately three hours up to a full work day, largely dependent on the complexity of the position and the job activity at the time of observation. (3) Interview with the worker -- when the researcher felt that he had learned as much as possible through observation, a time was arranged to discuss the position in detail with the worker. This was for the purpose of competing any parts of the Position Analysis Questionnaire that were not discernable through observation.

The PAQ analysis therefore, required much more researcher time, as up to two full work days were spent in.data collection for each analysis. In some cases, as many as 40 task analyses could be completed in one work day, since multiple analyses were possible in a single business. In addition, the time required in the business was essentially limited to the time needed for the worker to complete the questionnaire.

Data Analysis

The task inventory data analysis was very simple. It involved determining the mean significance attributed to tasks by respondents on the task inventory questionnaire. This analysis was also very simple to interpret since the task receiving the highest rating was the most significant, etc.

The PAQ data analysis, on the other hand, involved the use of an existing PAQ computer analysis program. Analysis of the data derived from the PAQ without the use of this program would have been very difficult if not impossible. Percentile rankings calculated for each item were based on a 2200 job normative sample data base, to which this researcher did not have access. The interpretation of this analysis was considerably more complex also, since it involved much more than simple means.

Comparison of Results

To make some comparison between the results of the two job analysis techniques employed, the researcher identified the 25 highest rated items by each procedure and presented them together. The criteria used for selection of the items from the task inventory analysis was mean ratings.

Mean ratings would, however, have been mostly meaningless for the PAQ analysis procedure. This was because, first, all scales were not alike. Most scales utilized in the PAQ are zero to five scales, but some were one to five and others were just zero and one (applicable/not applicable) scales. The mean of an item rated on a zero to one scale is not directly comparable to the mean of an item rated on a zero to five scale. Use of percentiles standardizes scores so that all items can be compared. The percentiles derived by the PAQ analysis were based on a normative sample of 2200 jobs analyzed using the PAQ. Therefore, percentile ratings were used to select the top 25 items from the PAQ analysis.

Since the nature of items in the two procedures used is different, all items in one questionnaire did not always have comparable items in the other questionnaires. Also, since the PAQ items are in more general terms, they sometimes compared to more than one task inventory item.

Among the 25 highest rated items by each of the two analysis procedures from one-fourth to approximately one-third of the items were found to be represented on both lists at least in comparable form. Conversely, from two-thirds to about three-fourths of the items in one list were not contained in the other list for the three occupations.

CONCLUSIONS

From the conduct of the occupational analyses reported in this paper, the researcher was led to the following conclusions:

(1) Task inventory analysis is more specific in identifying what a worker does than is the PAQ.

(2) The Position Analysis Questionnaire is a valuable job analysis tool for identifying the types of activities associated with the job, and these types of activities are more adaptable to various occupations.

(3) The PAQ addresses the area of interpersonal relationships which is frequently neglected in task inventory analyses.

(4) Whenever feasible, a job analysis should involve both of these techniques. The PAQ would be a logical first process to identify general human activities required on the job. Task inventory analysis would then provide more specific information for planning day-to-day instructional activities.

(5) When the use of both processes is not feasible, this writer would propose use of the more traditional task inventory analysis. The rationale for this proposal is that (1) the task inventory procedure is simpler and results are more easily understood; (2) results are unlikely to be used if they cannot be readily understood; and (3) task inventories may be overly detailed, but seldom are overly general in nature.

(6) Both techniques of occupational analysis utilized in this study, task inventory and PAQ, are excellent procedures in terms of adaptability to various occupations, acceptability to respondents and users, and reliability of instruments.

RECOMMENDATIONS

The findings and conclusions of the study serve as the basis for the following recommendations:

(1) Occupations for which training programs are designed should be periodically subjected to an occupational analysis to access the relevance of the training program.

(2) When multiple successive job analyses are not feasible for an occupation, the periodic job analyses should, over time, employ the different techniques. This would enable researchers to better insure that all areas of importance had been identified, even though this identification had only occurred over a number of years.

(3) The task inventory analysis procedure should be used for curriculum development purposes when only one analyses is feasible.

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SECOND SESSION

RELATIONSHIPS BETWEEN PROGRAM EVALUATION STATEMENTS AND DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS IN A SOUTHERN REGION STUDY OF VOCATIONAL AGRICULTURE/AGRIBUSINESS EDUCATION GRADUATES FROM 1974

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INTRODUCTION/NEED FOR THE STUDY

With the national trend to reduce governmental spending wherever possible, accountability has taken on new importance for vocational educators. As it is commonly used in education, accountability implies the acceptance of responsibility for the effectiveness of programs in delivering appropriate and relevant educational services to students -- and thus to the public -- within budgetary restrictions. Evaluation of educational programs by the "products", the graduates themselves, has general acceptance in the profession and by the public. The present austerity program in governmental funding accents the need for current information -- including program assessment responses -- from program completors. This was the focus of the study completed in late 1979 by the Research Committee of the Southern Region. (Iverson and Brown, *et al*.)

The Study

Cooperating researchers in the ten Southern states of Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, Oklahoma, Texas and Virginia administered a two page questionnaire by mail to the 1974 graduates from a 10% systematic sample of high school vocational agriculture departments, stratified by district. The instrument was modified from one developed at Mississippi State University (Allen, 1978). The reliability coefficient of the final instrument was .87 using Cronbach's Alpha (N=976).

After a second mailing, a 10% random follow-up of nonrespondents was conducted by telephone. Univariate analysis of the telephone and mailed responses indicated no significant differences, so the responses were combined. The 1252 respondents were primarily male, ages 22-23, Caucasian, from rural homes, and earning over $10,000 annually. Over one-half (50.9%) were found to be in an agriculturally related occupation.

The graduates were generally positive and supportive of the quality of the vocational agriculture program in the South as exemplified by the finding that 92% would enroll again, if they had it to do over! However, it is nearly as important to know *why* respondents rated the programs highly as it is to know *how* they rated them.

Further Analysis

Discussing uses of descriptive research, Ary, Jacobs and Razavieh (1972) pointed out that "surveys can be used not only for describing existing conditions but also for comparing these conditions with predetermined criteria or for evaluating the effectiveness of programs." (p. 293). They also stated that ex post facto "...is that research in which the consequence is immediately observable, and the problem is to determine the antecedents that gave rise to this consequence. The basic purpose of ex post facto research is to discover or establish causal or functional relationships among variables..." (p. 264). The authors said, in summary,

> "Although there are many disadvantages of the ex post facto approach, it nevertheless is frequently the best method by which educational researchers can obtain necessary information about characteristics of defined groups of students or information needed for the intelligent formulation of programs in the school. It permits the researcher to investigate situations in which it is impossible to introduce controlled variations." (p. 281).

OBJECTIVES OF THE STUDY

It was the intent of the researchers to further analyze data from the Southern Regional Study to determine if categories of responses could be identified, and if a significant relationship existed between these categories and the demographic variables. If such relationships could be identified, educators would be better able to plan and evaluate vocational agriculture programs in the Region.

METHODS AND PROCEDURES

The 26 program evaluation statements were examined by factor analysis using pairwise deletion for missing data (only variables within cases having missing data were deleted). Categories of evaluation statements (constructs) were identified through factor analysis, utilizing the principal components method, followed by the Kaiser Normalized Varimax Rotation.

Harman (1960) stated that principal components was the most desirable way to obtain initial factor structure of a correlation matrix. Initially, if "ones" are placed in the diagonals, the procedure will extract principal components, which are defined as exact mathematical transformations of the original variables. The principal components method extracts a maximum correlation matrix in the smallest number of orthogonal factors and accounts for all of the variance.

After the proper terminal solution was obtained, composite scales were generated that represented the theoretical dimensions associated with the respective factors for each category of evaluation statements identified. This was accomplished by using the factor-score matrix and by utilizing the complete estimation method of computation, which recognizes the influence of all variables in the development of the matrix to generate factor scores for each observation so as to provide continuous, normalized, equal-interval scores that have a mean of zero and a standard deviation of one. Thus, a factor is defined as a mathematical construct representing a basic pattern or characteristic.

To aid in interpretation, Vincent (1971) suggested factor loadings of .5 or more should be used as high loadings. If there are no factor loadings of .5 or more, then the items with the highest factor loadings should be considered. Adelman and Morris (1967) stated that in order to reduce the likelihood of random associations, a variable should be omitted when its highest loading in a given rotated factor matrix is below .45. For the purpose of this study, variables loading greater than or equal to .50 on a factor were considered in interpreting the meaning of that factor. Six factors were identified, based on variables loading at .50 or greater.

The next step in the analysis was to set up a multiple regression model which allowed the researchers to examine the main effects and their interactions. This analysis aids in the explanation of the variance of the dependent variable by indicating the relative contributions of the independent variables to the prediction of the dependent variable (Kerlinger and Pedhauzer, 1973). At NCSU, the complete model was entered into Triangle University Computation Center (TUCC) SAS system which utilized two hours of computer time and 6318 K of computer core to develop a general linear model for factor one only. At a potential cost of nearly $400 per factor, it was impractical to continue the procedure in the TUCC system. Since the Auburn University computer had but 4048 K of memory it was necessary to run the analysis in three parts, in order to develop reduced models. This is consistent with Bancroft's (1968) "incompletely specified models" statement. The first two runs consisted of preliminary investigation of main effects and their interactions. The reduced models were composed of all interactions and their main effects which had a probability of .20 either before or after adjustment for other effects (Weiner, 1971). The researchers made the decisions as to the order in which variables would enter into the regression analysis on the basis of precedence in time or cause-effect. This a priori ordering approach is appropriate in non-experimental designs (Kerlinger and Pedhauzer, 1973).

The demographic variables of educational level, years of enrollment in Vo-Ag, years of membership in FFA, degree held in the FFA, state from which one originated, years of enrollment in adult or young farmer classes, race, sex, income, age, place of residence, and occupation were employed as predictors (independent variables) and the six constructs (factors), measured in Part II of the survey and identified by factor analysis, were used as criterion (dependent) variables. A probability level of .05 was used to determine significance within the model. The following null hypothesis was tested:

Ho 1. There will be no statistically significant linear regression model for each factor (construct) in the Southern Regional Study.

RESULTS: FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Findings

1. The data gathering instrument was found to have high reliability (Cronbach's Alpha = .87).

2. Six categories of response statements were identified by factor analysis. These six factors were:

Factor 1 - Vocational Agriculture (Vo-Ag) Program Components and Functions
Factor 2 - Agricultural Career Guidance
Factor 3 - Non-Agricultural Career Guidance
Factor 4 - Human Relations/Leadership Skills
Factor 5 - Values of the Vo-Ag Program
Factor 6 - Vo-Ag Emphasis on Farming

3. Examination of the overall regression models -- for the six identified factors and the demographic variables -- indicated a significant relationship for each derived regression model. Thus, Ho 1 -- there will be no statistically significant linear regression model for each identified factor -- was rejected at the .05 level of significance. In addition, the summary of the regression equations revealed that the final regression models accounted for from 24 to 49 percent of variance (R^2), the somewhat low R^2 being due partially to reduced models necessary because of limited computer capacity/funding and possibly because of other undetermined sources of variance.

4. Student evaluation of Vo-Ag program components and functions (Factor 1) was significantly related to state, race, residence (main effects) and the interactions of: state and sex, race, years of Vo-Ag, and years of adult classes; race and residence, educational level, and highest degree; and years of adult classes and highest degree. Neither occupation nor income were significantly related to responses on Factor 1.

5. Responses to questions on Factor 2, Agricultural Career Guidance, were significantly related to just two interactions: state and years of SOEP; and occupation and income.

6. One main effect and nine interactions were significantly related to responses on Factor 3, Non-Agricultural Career Guidance. Residence was the sole main effect. State and years of Vo-Ag; race and residence, educational level, and years of Vo-Ag; residence and years of SOEP, highest degree and years of adult class; years of Vo-Ag/years of SOEP; and years of FFA/years of SOEP were the significant interactions.

7. Two main effects -- residence and educational level -- were significantly related to responses on Factor 4, Human Relations/Leadership Skills. The only significant interaction was years of Vo-Ag/residence.

8. On Factor 5, Values of the Vo-Ag Program, just four main effects were significant -- educational level, years of FFA, highest degree, and years of adult classes. Five interactions were significantly related: state and years of FFA and years of adult class; race and years of Vo-Ag; educational level and years of adult class; and years of FFA/years of SOEP.

9. State, race and income were signifcantly related to responses on Factor 6, Vo-Ag Emphasis on Farming. State -- race and years of FFA -- income were the two significant interactions.

Conclusions and Recommendations

This expanded analysis has provided additional evidence of the impact of the vocational agriculture program on students in the Southern Region. The high reliability (.87) of the instrument makes it valuable for use in other locales. Widespread use of the instrument at the local, state and regional levels would aid in the development of a national data bank for agricultural education.

Educational planners at the local, state, regional and national levels can, by utilizing regression models, predict evaluative responses on the six factors. Thus, if program managers have prior knowledge of certain demographic characteristics of potential students, they could develop and/or modify programs so as to maximize satisfaction with and student benefits from the vocational agriculture program.

Utilizing data from graduates is a valuable procedure in educational program evaluations. Evaluators can expect to get consistent results by utilizing the Southern Region instrument with program completors.

Variation among states affects respondents' evaluations more than any other variable; race, educational level, years of Vo-Ag, FFA and SOEP also strongly affect response; residence, degrees held and years of adult classes are moderate in effects, while income, occupation and sex of the respondents have little influence on responses.

The researchers recommend further investigation into the above relationships using data from other states in order to test the results found in this study.

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THE ASSOCIATION OF SELECTED CHARACTERISTICS WITH THE AVERAGE NET INCOME FROM SUPERVISED PROJECT PROGRAMS OF PRODUCTION AGRICULTURE STUDENTS IN TEXAS HIGH SCHOOLS

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INTRODUCTION

Supervised project programs, instructional tools used by production agriculture teachers since the inception of vocational agricultural education, have been used to provide realistic and practical educational experiences for students. These experiences have essentially been twofold. First, students have been expected to increase their technical knowlege and practical skills in the realm of agricultural production through project programs. Secondly, they were expected to earn net incomes based on their investment in a production enterprise. Supervised projects of students vary greatly in size and scope, making it difficult to establish criteria by which these programs can be evaluated.

Net income derived by students from supervised project programs has traditionally been important to students, their parents, vocational agriculture teachers, and other vocational education personnel. In Texas, net income has often been used for the following purposes:

1. Success of individual student projects have sometimes been judged on a monetary basis.
2. Advancement in the Future Farmers of America has been based on net income.
3. Students' progress grades have frequently been based on the net income derived from projects.
4. The quality of instructional programs and of teachers has sometimes been based on net income.
5. The overalleffectiveness of local as well as statewide vocational agriculture production programs has occasionally been evaluated by the net income from project programs.

Since net incomes from supervised project programs have been a basis for determining the scope of the programs in Texas for many years, it was thought to be desirable to determine what factors, if any, were associated with the net incomes derived from the supervised project programs of students. Vocational agriculture teachers, key personnel in supervised project program development, have used various methods and strategies with different degrees of success for planning and developing supervised project programs. Emphasis on the efficient development and use of supervised project programs to provide desirable educational experiences for vocational agriculture students has necessitated an examination of the nature of programs and of the educational resources used by teachers to meet these educational demands.

OBJECTIVES OF THE STUDY

The purpose of this study was to determine if selected characteristics of production agriculture teachers, programs, communities, methods used for program development, and perceived values of supervised project programs as expressed by teachers were associated with the average net income from supervised project programs of production agriculture students in Texas high schools. Objectives for this study were as follows:

1. To determine if the selected characteristics of production agriculture teachers were associated with differences in average net income from supervised project programs.
2. To determine if the selected characteristics of production agriculture programs were associated with differences in average net income from supervised project programs.
3. To determine if the selected characteristics of communities in which production agriculture programs are located were associated with differences in average net income from supervised project programs.
4. To determine if selected methods used by production agriculture teachers to plan and develop supervised project programs were associated with differences in average net income from supervised project programs.
5. To determine if perceptions held by production agriculture teachers of the values of supervised project programs were associated with differences in average net income from supervised project programs.

PROCEDURE

Data were obtained from questionnaires returned by production agriculture teachers who represented 275 of 300 departments--a 91.6 percent response rate--of a random sample selected from 900 vocational agriculture departments in Texas in which production agriculture was taught during the 1978-79 school year. Analysis of variance and chi-square analyses were used to test the null hypotheses at the .05 level of probability. Duncan's New Multiple Range Test was used to indicate the specific differences among means following significant analysis of variance results.

RESULTS

Findings

Total tenure of vocational agriculture teachers was associated with average net income. Departments having teachers whose total tenure interval was 16-25 years had significantly higher net incomes than departments having other tenure intervals.

Departments in which none--00.0 percent--of the teachers had lived on a farm or ranch during their childhood had significantly higher average net income than departments having higher percentages of teachers who had lived on farms or ranches.

Male student enrollment was associated with average net income as departments with 16-30 male students in production agriculture programs had a significantly higher average net income from supervised project programs than did other enrollment categories.

Departments having diversified livestock and crop project programs had higher average net incomes from supervised project programs than departments having supervised projects which were basically livestock feeding or crop production projects.

Of twenty selected methods used to plan and develop supervised project programs, only the use of written records of visits to students was associated with average net income. Teachers in departments with lower average net incomes used written records at a greater frequency than expected.

Vocational agriculture teachers in departments with higher average net incomes agreed with greater frequencies than expected that projects help students learn to follow written directions, help students to determine self-employment opportunities, and help create and/or maintain students' home environments. Teachers in departments with lower incomes disagree more than expected with the use of projects to help create and/or maintain students' home environments.

Conclusions

In so far as the data obtained and analyzed in this study are representative of the whole, it is evident that little association exists between average net income per student in production agriculture classes and the characteristics of (1) production agriculture teachers, (2) programs, (3) communities, (4) methods of program development and (5) teachers' perceptions of the values of supervised projects. Consequently, the underlying hypothesis for this research, which stated that these associations do exist, is not supported. It is evident, therefore, that the assumptions made in support of the hypothesis are not valid.

The assumption that net income varies due to selected characteristics of production agriculture teachers, of programs, and of communities in which programs are located, is not valid. Only two of eight characteristics of teachers, two of 11 characteristics of programs, and none of four characteristics of communities were significantly associated with average net income.

The assumption that average net income tends to vary due to the methods used by teachers to conduct programs is not valid. Only one of the 20 methods examined was significantly associated with average net income per student from supervised project programs in production agriculture.

Furthermore, the assumption that net income varies with the perceived values teachers place on supervised projects is not valid. Only three of the 16 value statements in the study were significantly associated with average net income. However, almost all teachers believe supervised project programs are of immense value in serving the personal, educational, and occupational needs of students.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. Criteria should be developed and validated by which supervised project programs can be evaluated to enable vocational agriculture teachers and other vocational personnel to improve supervised project programs.
2. Increased emphasis should be given by vocational agriculture

teachers, teacher educators, and Texas Education Agency personnel on the educational values of supervised project programs and less importance should be placed on the attainment by students of higher net incomes from supervised project programs.

3. The location of childhood residences of vocational agriculture teachers should neither be used exclusively as criteria by which the employment of teachers is determined nor as exclusive criteria by which the success of teachers is measured.
4. Vocational agriculture teachers should promote diverse and comprehensive supervised project program development to provide sound economic bases for students' supervised project programs.
5. Vocational agriculture teachers should be encouraged to promote. diverse and comprehensive supervised project programs to provide a variety of educational experiences for students.

Additional research is needed to investigate the following areas of concern:

1. Criteria for supervised project program evaluation should be investigated, field tested, and implemented in Texas.
2. A comparison of the values of supervised project programs as perceived by vocational agriculture teachers, production agriculture students, and by employers of former production agriculture students should be conducted.
3. A follow-up study of vocational agriculture graduates should be conducted to determine the effectiveness of supervised project development methods used by vocational agriculture teachers.
4. A comparison should be made of the various ways that vocational agriculture students may meet the requirements for satisfactory completion of the supervised project requirements of production agricutlure.

AN ASSESSMENT OF AGRICULTURAL MECHANICS SAFETY INSTRUCTION CONDUCTED AT AGRICULTURAL TEACHER EDUCATION PROGRAMS ACROSS THE UNITED STATES

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INTRODUCTION/NEED FOR THE STUDY

The passage of the Smith-Hughes Act of 1917 envisioned agricultural mechanics instruction to be an integral part of the vocational agriculture program. However, the very nature of the agricultural mechanics laboratory or shop is conducive to safety hazards and the potential for possible accidents. Always a danger has existed but there is today a broadened scope and complexity in agricultural shops across the United States. Modern complex machinery found in today's shop can efficiently severe an arm or leg as easily as it processes woods or metal.

Vocational agriculture teachers should be concerned with keeping their student's safe and free from harm. This is no easy task as the problems of sophisticated equipment, overcrowded class sizes and shop facilities place a burden on the public school and more directly on the vocational agriculture instructor. Agricultural teachers have a moral and legal responsibility to act with caution and prudence, to keep their students free from accidents and hazards.

Agricultural teacher education programs across the states are responsible for preparing future agriculture teachers for competancy in many areas of study. Agricultural mechanics is one of these areas and safety is one crucial aspect of agricultural mechanics. The health and safety of students should always be the primary consideration of any school program. Some teacher trainers have recently expressed misgivings over the sufficient or insufficient influence being exerted by the individual teacher training programs in agricultural mechanics. Their concern was that vocational agriculture students be given proper concepts and practices in safety. For the student to get this, the agriculture teacher himself must have the necessary training and expertise to instill these very things in his own students.

There is a need to know what is being done in the area of agricultural mechanics safety instruction conducted in agricultural teacher education programs across the United States. The purpose of this study was to assess selected areas of safety instruction in agricultural mechanics conducted at agricultural teacher education programs across the United States. The results of this study can be a means of helping university and college educators improve their individual programs. By carefully scrutinizing and evaluating their existing agricultural mechanics program, they can assess the strengths and weaknesses related to safety instruction. It is hoped this study may directly or indirectly reduce the hazards and tragedies that may occur in the local shop that affect our program's greatest resource - the student.

OBJECTIVES OF THE STUDY

1. To determine the amount of importance currently placed on selected areas of safety instruction by agricultural teacher education programs.

2. To determine the amount of time spent on selected areas of safety instruction.

3. To determine the amount of training agricultural mechanics teacher trainers have had in selected areas of safety.

4. To determine where agricultural mechanics teacher educators received their training or preparation in selected content areas of safety instruction.

5. To determine the level of safety preparation of agricultural education students across the United States.

6. To determine the academic homes and teaching assignments of the agricultural mechanics teacher educators.

METHODS AND PROCEDURES

A questionnaire was developed and mailed to agricultural mechanics teacher trainer(s) from 87 agricultural teacher education programs in the United States. A self-addressed, stamped envelope was enclosed to encourage a prompt response and return. A cover letter from the researcher was enclosed explaining the importance and value of the study and its relationship to the continued success of agricultural teacher education across the United States. A follow-up letter was mailed to all non-respondents two weeks after the first mailing. The week before the final deadline for all data collection, 10 random telephone calls were made to those non-respondents in the population.

The population for this study was derived from the list of agricultural mechanics teacher trainers identified in the 1980-81 Agricultural Teachers Directory. Additional names of agricultural mechanics teacher trainers were secured from Mr. Harold Parady of the American Association for Vocational Instructional Materials and Mr. Byron Rawls of the National FFA office. In an attempt to contact every agricultural mechanics teacher trainer across the United States, the researcher also contacted 18 agricultural education department heads and requested the names of faculty specifically involved in agricultural mechanics teacher education. The population of this study consisted of 103 agricultural mechanics teacher educators. Ninety five teacher trainers representing 92% of the population responded to the mailed questionnaires.

RESULTS

Findings and Conclusions

Teacher trainers in agricultural mechanics: perceived organizing the shop and keeping house to be of "very much" importance in those aspects of shop environment, perceived all aspects of safety education and enforcement-accident prevention to be of "very much" or "much" importance, spent 1-5 hours of class and shop time on most aspects of safety instruction, had at least "some" training in every area of safety, secured most of their safety training through individual study or preparation, and perceived their agricultural education students to be "adequately prepared" in most aspects of safety. One-third of the teacher trainers held academic appointment in agricultural engineering and one-third held academic appointment in agricultural education, over one-half of the teacher trainers had additional duties besides teaching.

In teacher education in agricultural mechanics: the enforcement-accident aspects of safety was stressed most strongly, traditionally teacher trainers have spent more time on aspects of safety education; primarily this has been on the safe use of equipment, an inadequate amount of time was spent on aspects of shop environment and enforcement-accident prevention, teacher trainers were better trained in aspects of safety education and enforcement-accident prevention, in the past teacher education programs had not adequately prepared teachers in safety but teachers had to get training on their own, new teachers were not being trained in first aid, there was not set pattern to the academic homes and teaching assignments of teacher trainers, and few teacher trainers had full-time teaching assignments in agricultural mechanics.

Recommendations

As a result of the conclusions drawn from the analysis and interpretation of data, the following recommendations were made:

It was recommended that agricultural teacher education programs and state departments of vocational education initiate a series of in-service workshops and training seminars in the area of emergency first aid care for both new and experienced vocational agriculture teachers.

It was recommended that individual teacher education programs with no agricultural mechanics facilities explore a cooperative teaching arrangement with local area vo-tech schools and high school agriculture departments in which agricultural mechanics safety could be taught.

It was further recommended that a formal safety class be offered as a required curriculum for all agricultural education majors found in teacher education programs across the United States.

Further research in agricultural mechanics safety instruction should be continued on a regional or national basis.

EDUCATIONAL/SCIENTIFIC IMPORTANCE OF THE STUDY

Agricultural Education has traditionally involved social science research in many areas. One crucial area is that of safety. This study has explored a dimension of great importance in vocational agriculture-teacher education. The well being, the very life of a student is at stake.

By this assessment of agricultural mechanics teacher education in safety instruction, data and results of this study can be made available to the 87 agricultural teacher education programs in the United States. Individual teacher education programs can then use the implications of this study to strengthen their programs through careful evaluation and assessment of present safety instruction. A determination of both the adequacies and inadequacies of the program can be achieved.

THIRD SESSION

FOLLOW-UP OF AGRICULTURAL EDUCATION GRADUATES FROM TEXAS A&M UNIVERSITY FOR THE YEARS 1972-1975

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INTRODUCTION

Departments of Agricultural Education nationwide conduct research studies to evaluate curricular effectiveness. A popular method used is the follow-up study. At Texas A&M University, the Department of Agricultural Education has maintained an ongoing effort to obtain evaluation data through follow-up studies of its graduates. A dissertation in 1969 by Elroy Otte examined "Factors Affecting the Educational and Career Choices of Agricultural Education Graduates at Texas A&M University, 1960-1964." In 1978, Webb, Stone, and Vaclavik conducted a "Follow-up of Agricultural Education Graduates from Texas A&M University for the years 1965-1971." The present study of 1972-1975 graduates contains many similarities in research procedures and questions used in the former studies. The information obtained in this research may be added to the broad base of data in other departments of agricultural education, to allow teacher educators to make better informed decisions on program improvements.

OBJECTIVES OF THE STUDY

A twofold purpose existed for conducting this investigation. One was to determine the effectiveness of the curriculum in Agricultural Education in preparing graduates for careers in agriculture. A second was to investigate the career patterns of TAMU agricultural education graduates. In order to achieve the foregoing purposes, the following objectives served as guidelines in the acquistion and analysis of data:

1. To determine the persons and factors that influenced graduates to earn a degree from Texas A&M University and to select agricultural education as a major field of study.

2. To determine what changes, if any, should be made in the curricular offerings of the agricultural education degree program.

3. To determine what factors affect the decision making process in regards to the career patterns of graduates of the Department of Agricultural Education.

PROCEDURES

The population for this study included all of agricultural education graduates for the period of 1972 through 1975. A questionnaire was developed using the instrument from the 1965-1971 study by Webb, et. al., as a guide. Many questions from the earlier study were used without modification so that comparisons could be made between the samples for the 1965-71 and 1972-75 studies. When necessary, changes were made to make the revised questions more relevant to the objectives of the study. The questionnaire was a closed form instrument. A 5-point Likert scale with 5 being a very strong level of influence and 1 representing no influence was used to collect the data on most of the questions. Other items requested respondents to select the most appropriate response from a list of possible factors. Each questionnaire was coded so that graduates might respond candidly to the questions asked. The mailing contained a cover letter explaining the purpose and need for the study, and a preaddressed, stamped envelope for its return. Three mailings resulted in a 76 percent return of usable questionnaires. Respondents were classified as current teachers, former teachers and non-teachers. Table 1 shows the number of respondents by career category.

Table 1. Number of Respondents in Each Career Category

Career Category	Number of Respondents	Percent of Respondents
Current teacher of vocational agriculture (Teachers)	43	24.9
Dropped out of teaching (Former Teachers)	32	18.5
Never taught vocational agriculture (Non-Teachers)	98	56.6
Total	173	100.0

RESULTS

Only a partial listing of the findings of this investigation are presented in this paper. Four of the 30 tables developed in the study are used. Data are presented pertaining to the topics that seem to have implications for undergraduate recruitment and curricular offerings in agricultural education.

Undergraduate Recruitment

The decision of students to major in agricultural education is influenced by a variety of persons and factors. Table 2 shows the mean responses for the degree of influence persons held in the graduate's decision making process. Vocational agriculture teachers were found to be the most influential by persons in all three groups -- teachers, former teachers, and non-teachers. Parents, senior college faculty members, and friends were also rated relatively strong for the level of influence held by graduates to choose agricultural education as a college major.

Table 2. Degree of Influence Persons Had on Decision of Graduates to Choose Agricultural Education as a Major Field of Study

Person	Mean Response*			
	Overall N=173	Teachers N=43	Former Teachers N=32	Non-Teachers N=98
Vocational Agriculture Teacher	3.31	3.47	3.13	3.30
Parents	2.57	2.60	2.71	2.53
Senior College Faculty Members	2.50	2.93	2.58	2.28
Friends	2.33	2.30	2.26	2.36
Relatives	1.86	1.80	1.74	1.91
County Agent	1.81	1.79	1.74	1.84
Junior College Teachers	1.66	1.72	1.84	1.57
High School Teacher (Not Voc. Agri.)	1.33	1.51	1.42	1.23
High School Counselor	1.15	1.09	1.03	1.23

*5 = very strong; 1 = no influence

Table 3 shows the mean responses for the degree of influence factors had on the decision of graduates to major in agricultural education. The factor that had the most influence was "the desire to secure a broad knowledge of scientific agriculture." "Involvement with FFA and/or 4-H club," "opportunities in agribusiness," "opportunity to work with youth" and "desire to teach vocational agriculture" were also found to be significant factors.

Table 3. Degree of Influence Factors had on Decision of Graduates to Major in Agricultural Education

Factors	Mean Response* Overall N=173	Teachers N=43	Former Teachers N=32	Non-Teachers N=98
Secure a broad knowledge of scientific agriculture	4.00	3.77	3.74	4.18
Involvement with FFA and/or 4-H Club	3.62	3.79	3.48	3.59
Opportunities in agribusiness	3.32	2.85	3.06	3.61
Opportunity to work with youth	3.28	3.84	3.46	2.98
Desire to teach vocational agriculture	3.24	4.07	3.74	2.71
Job security-always easy to find a teaching job	2.69	2.51	2.59	2.81
Desire to be a county agent	2.24	1.90	1.97	2.47
A career day presentation	1.29	1.31	1.13	1.33

*5 = very strong, 1 = no influence

Curriculum in Agricultural Education

The curriculum in Agricultural Education at Texas A&M during 1972-75 with respect to required or recommended elective course areas included the following semester hours: 6 hours of agricultural economics, 17 hours of agricultural education, 12 hours of agronomy, 9 hours of agricultural engineering, 9 hours of animal science and 18 hours of scientific agricultural electives, 6 hours of biology, 12 hours of chemistry, 3 hours of mathematics, 3 hours of educational curriculum and instruction, and 3 hours of educational psychology were also required for graduation. Table 4 presents changes graduates believe should be made in required or recommended elective course areas. Three areas of scientific agriculture courses were significantly perceived by the graduates as needing to be increased. These were agricultural economics, agricultural engineering, and animal science. Chemistry, and the professional education courses showed the greatest percent of respondents indicating a desire to decrease the number of hours required.

Table 4. Changes Graduates Believe Should Be Made in Course Areas

Required Recommended Elective Course Areas	Responses					
	Should Be Increased		Should Remain the Same		Should Be Decreased	
	Number	Percent	Number	Percent	Number	Percent
Ag Economics	83	49	82	48	4	2
Ag Education	24	14	128	75	17	10
Agronomy	44	26	120	71	4	2
Ag Engineering	73	42	92	53	6	3
Animal Science	71	42	92	54	6	4
Dairy Science	27	16	116	69	18	11
Entomology	33	19	128	75	8	5
Horticulture	45	27	98	58	16	9
Poultry Science	16	9	136	80	12	7
Range Science	36	21	112	66	16	9
Biology	13	8	127	74	28	16
Chemistry	10	6	93	55	65	38
English	12	7	114	67	41	24
Mathematics	30	18	117	68	21	12
Edu. Curr. & Inst.	24	14	82	49	59	35
Ed. Psychology	19	11	60	35	87	51

There are several additional course areas that are not normally taken by students majoring in agricultural education. Fourteen such areas are listed in table 5. The graduates were asked to respond in one of three categories: "should be added," "should not be added," "or "undecided." Four areas all of which are offered in the College of Business were rated as "should be added" by a significant number of the graduates. These areas include accounting, finance, management and marketing. Sociology was rated in the "should not be added" category by 69 percent of the graduates. They also rated computer science and statistics as being two course areas that should not be added.

Table 5 presents a complete summary of the graduates responses to all fourteen course areas.

Table 5. Additional Course Areas Graduates Believe Should or Should Not Be Included in the Agricultural Education Curriculum

	Responses					
	Should be Added		Should Not Be Added		Undecided	
Course Areas	Number	Percent	Number	Percent	Number	Percent
Accounting	105	61	34	20	32	19
Adult Education	75	45	45	27	47	28
Business Analysis	64	38	66	39	38	23
Computer Science	51	30	85	50	33	20
Ext. Organization and Methods	57	34	63	38	47	28
Finance	97	57	40	24	32	19
Journalism	62	37	67	40	40	24
Management	113	67	35	21	21	12
Marketing	112	67	31	18	25	15
Prin. of technological change	48	29	61	37	58	35
Speech	84	50	52	31	31	19
Sociology	16	10	116	69	36	21
Statistics	31	19	97	58	39	23
Technical Writing	71	42	67	39	32	19

Recommendations

Based on the findings presented in this paper, the following recommendations are made.

1. Vocational agriculture teachers should be included as an integral component of any recruitment program for a department of agricultural education.

2. Recruitment programs should emphasize the opportunity to "secure a broad knowledge of scientific agriculture" when a person chooses agricultural education.

3. The hours of scientific agriculture courses required or recommended in the degree program for agricultural education majors should remain as presently constituted.

4. Efforts should be made to find additional courses in the College of Business to be added as electives to the curriculum in agricultural education.

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EXTENSION ENERGY TIPS: A PILOT STUDY OF A TELECASETTE ENERGY INFORMATION SERVICE

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INTRODUCTION

At this time energy awarness and conservation are primary concerns of the general public. As a result, the Cooperative Extension Service has been charged by the U.S. Department of Energy with the added responsibility of providing County Energy Information Centers (CEIC).

Another aspect of the Cooperative Extension Services new thrust into the area of energy is added responsibility on the part of individual agents. Extension agents are responsible for implenting and incorporating energy programs into their current ongoing programs as well as disseminating CEIC materials. To accomplish this new assignment, without detriment to their established programs, the county extension personnel need reliable energy and time efficient systems of information dissemination.

In an effort to find an answer to this need, the University of Florida Agricultural and Extension Education Department in conjunction with the Sarasota County Cooperative Extension Service conducted a study of a pilot telecassette system used to disseminate energy information. This system was used as a supplement to the methods of information dissemination already being employed by the Sarasota County Extension personnel.

It was thought that such a system would enable county extension personnel to serve a greater number of energy clients per man-hour on the job than some other methods now employed, thus relieving some of the work load of the county extension personnel.

OBJECTIVES

The objectives of this project were:

1. The establishment of a pilot telecommunication energy information system in Sarasota County, Florida at the County Extension Office.
2. To determine the acceptability of using a telecommunication information system to disseminate energy information.
3. To determine the practicality of using a telecommunication information system for energy information dissination.
4. Determination of user demand patterns, information preferences and total system use.
5. Determination of the cost-to-savings ratio of a telecommunication system used to disseminate energy information.

METHODS & PROCEDURES

The Extension Energy Tips project was divided into three stages. Stage one was the preparatory stage. During this period the state of the art of telecommunication information systems was examined.

After deciding on a system the process of site and topic selection began. To establish the degree of interest in this type of system and assertain the main topics of concern, a state wide survey of county extension directors was conducted. This survey asked each director to identify the ten most frequently asked energy questions in the county. From the results of the survey we obtained the 100 topics which were used in the project.

As a result of our correspondence with the various county extension directors it came to our attention that the Sarasota County Extension Director, was interested in establishing a telecassette system for information dissemination in Sarasota County. Upon further discussions with the County Director it was decided that the pilot study for the Extension Energy Tips program would be conducted in Sarasota County.

Now that system and site selection were complete and the topics to be covered had been decided, the next order of business was gathering and screening resource materials. The search yielded an overwhelming supply of energy information from a wide variety of sources. In an effort to establish a comprehensive resource library energy materials were obtained from government, industry and commercial sources.

These materials were used to develop the scripts for this project. Development of the scripts turned out ot be one of the most tedious and time consuming aspects of the entire study.

Once the information was found, it was synthesized into an answer and written up in script form. The scripts were all constructed in a conversational mode. The initial completed script was then sent to various IFAS specialists for technical review. This process took several months. When the specialist approved the scripts, they were sent to the IFAS Editorial Department for taping.

While the scripts were in the review process, work was begun on the promotional materials needed for the study. The symbol chosen was a standard desk telephone, the general consensus was that this would be a good cluing stimulus for the promotional activities.

The name chosen for the program was "Extensions Energy Tips". This was chosen primarily for its future compatability with the expansion planned by the Sarasota County Director.

Once the symbol and name were chosen work began on the types of materials to be employed. Since this was a totally new program it was decided that a large wide angle promotion push would be the best approach. The main thrust of this program would be two fold. The distribution of "Extensions Energy Tips" brochures would be combined with considerable radio promotion.

All the promotional activities began the second week after service implementation. From initiation of the study until its implementation took approximately ten months. The majority of this time was spent on tape development and review.

The next stage of the program was the implementation of the program. The service was established in the Sarasota County Extension office under the direct supervision of the County Director.

The following is a scenario for the daily mode of operations of the system. A call was received by the receptionist. The tape requested was played for the caller or if the caller was unsure of which tape they needed to hear the receptionist aided them in making a choice. Once the caller had heard the tape they either hung up, if they had no further questions, or they stayed on the line and spoke with the receptionist about their question or request.

The evaluation process began several months before the system was implemented. The first step was the development of survey instruments. This job was undertaken by the project manager with input from the project supervisor, the Sarasota County Extension Director and other IFAS personnel.

The survey instruments were scrutinized and rewritten several times until all parties were satisfied. The development took about two or three months.

One survey was sent only to Extension Energy Tips users. This survey was conducted by mail. Each service user received a survey instrument accompanied by two cover letters and a pre-addressed stamped envelope. This group also received a reminder postcard two weeks after the survey instrument was mailed.

The second survey involved a random sample of the general public of Sarasota and the surrounding areas. This survey group was chosen from the General Telephone Company Sarasota and nearby communities June 1980 telephone directory.

After the list of names for the survey group was obtained, each person on this list was called. These people were called over a three day period, with the time of the call varying from 9am until 9pm. After the three day period a total of 205 people had been contacted.

RESULTS, CONCLUSIONS AND RECOMMENDATIONS

Results

The evaluation of this program was conducted on two fronts. The system users were surveyed to obtain an idea of their thoughts about the service. This group was sent an intensive questionnaire which dealt with their general attitudes on the energy situation and their actions resulting from the use of the system.

One area of the evaluation involved a random sample of the general public. The results of this survey were as follows:

1. Are you interested in participating in a survey concerning energy?

Yes	78%
No	22%

2. Are you interested in saving money on your energy costs?

Yes	63%
No	37%

3. Are you aware of the Extension Energy Tips Service?

Yes	20%
No	80%

The people who answered Yes to question 3 were then asked:

4. Have you ever used the Extension Energy Tips service?

Yes	6%
No	94%

The people who answered No to question 3 were told about the service then asked:

5. Now that you know about the service would you use it?

Yes	41%
No	59%

Another aspect of the evaluation was the survey of service users conducted by mail. Some of the highlights of this survey included the following:

1. Would you use the Extension Energy Tips service again?
    - Yes 98%
    - No 2%
2. Why did you use the Extension Energy Tips service?
    - Wanted general information 53%
    - Had a specific problem 29%
    - Curious 14%
    - Other reasons 4%
3. Did the information in the taped message answer your question?
    - Yes 85%
    - No 15%
4. Did you understand the taped message?
    - Yes 95%
    - No 5%
5. How satisfied were you with the service you received?
    - Very satisfied 72%
    - Somewhat satisfied 26%
    - Not satisfied 2%
6. Do you think that the Extension Energy Tips service is a practical way to get energy information?
    - Yes 95%
    - No 5%
7. How would you prefer to obtain energy information?
    - Calling the Extension Energy Tips service 51%
    - Talking with an Extension Agent on the telephone 33%
    - Visiting the County Extension Office 8%
    - Other methods 8%
8. Did you change your surroundings or lifestyle as a result of the information you received from the Extension Energy Tips service?
    - Yes 39%
    - No 61%
9. Would you like to see the Extension services taped message system expanded to include information on other topics?
    - Yes 98%
    - No 2%

Conclusions and Recommendations

The results of both the general public survey and the user survey indicate that the Extension service has an identity crisis among non-traditional users. This study group recommends that the Extension service begin a concentrated effort to make its presence and purpose known to a now primarily urban audience.

The results emphasize the importance of sustained publicity for new programs. Without weekly publicity efforts it is almost impossible to have a successful program. This group suggests that any organization planning a new program plot their publicity campaign with extreme care because it could mean success or failure for the program.

The use of a telecommunication system, like the one used in this study, to augment an existing staffs dissemination efforts seems to be quite helpful. Eventhough this program had relatively little use during the three month study period, the satisfaction of its users, and the willingness of these people to take action based on what they learned indicates that this system is useful in educating people and enabling them to change their surroundings.

Finally, the study determined a cost-to-saving ratio for this system based on the three month pilot period. The ratio makes the assumption that energy conservation money investments would produce energy cost savings within five years at least equal to the investment. The cost ($9800)-to-savings ($28,700) ratio for the Extension Energy Tips service would be about 1:3. This ratio does not take into consideration the savings resulting from behavioral or lifestyle changes. Also as the service gains more users the ratio should become greater.

On the basis of all these results this group can recommend this type of a program to others interested in more time and money efficient ways of enhancing their dissemination efforts.

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THE DEVELOPMENT OF A COMPUTER-BASED PROGRAM TO SHOW LONGITUDINAL TRENDS OF TEACHER AND PROGRAM CHARACTERISTICS IN VOCATIONAL AGRICULTURE

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INTRODUCTION

This was a project to mobilize existing computer-based data at the state level to identify the changes occurring in the characteristics of teachers and programs in vocational agriculture by the years. The essential advantages for such a system would be savings in time and capital to procure such information by annual or interval surveys.

OBJECTIVES

The primary objective was to develop a model computer program to facilitate the yearly retrieval of available state-wide data which could reveal trends in the characteristics of the teacher group and in the programs they conduct.

METHODS AND PROCEDURES

A cooperative relationship was established with key personnel in the Department of Public Instruction to obtain a tape of computerized data of the available, desired list of teacher characteristics and program characteristics. These personnel developed a program which drew data from four different departmental files. They agreed to provide this service yearly without charge to the project.

Technical assistance was provided from the N.C.S.U. Department of Statistics. Graduate assistants developed several computer programs over the years in the attempt to provide one that would be most satisfactory. Data were included only from teachers who had ten or more months of employment. This control eliminated data from teachers and programs undergoing personnel changes and which would be expected to provide data not representative of vocational agriculture.

The project was conducted on a part-time, ad-hoc basis without special funding between 1975 and 1981.

RESULTS

A computer-based program was developed which (1) enabled the tabling of four years (1977-1980) of data on 16 teacher or program characteristics and (2) provided a system to update these data on a yearly basis with a minimum of time and expense.

Findings-Selected

1. The number of teachers under 25 years of age rose from two persons

in 1977 to 24 persons in 1979-80.

2. A considerable drop (20 teachers) occurred in the number of teachers in the 40-44 age group.
3. The ratio of Blacks to Whites remained unchanged over the period with Whites constituting 78 per cent, while the number of female teachers increased from 5 to 14 in four years.
4. A majority of current teachers (58%) obtained their graduate degree from N. C. State and more than one-third (37.2%) from N. C. A&T State University.
5. There was no apparent change in the types of certificates held by Vo Ag teachers.
6. A slight decline in the percentage of teachers with masters degrees was recorded (37.7% to 32.6%).
7. A large increase occurred in the per cent of teachers paid twelve months on vocational funds: 50% in 1977 to 71% in 1980.
8. Multiple-teacher departments decreased from 21 in 1977 to 13 in 1979-80.
9. There was little change noted in vocational versus non-vocational duties, or in teaching versus non-teaching duties.
10. There was a steady decline in enrollment per teacher, from nearly 100 in 1977 to 78 in 1980. Likewise, the number of students per class declined from 19.3 to 16.3 in 1980.

Conclusions

The following conclusions seem warranted from this project:

1. Program and teacher data collected annually by the State Department can be obtained and translated into trends by means of computer programs.
2. The following trends appeared over the past four years:
    - (a) An increase in the number of teachers under twenty-five years of age and a steady decrease in the percentage of teachers in the 40-44 age group.
    - (b) An increase in female teachers from 5 to 14 persons.
    - (c) An increase in the number of teachers obtaining the master's degree from A&T State University.
    - (d) A decrease in the size of classes and in the enrollment per teacher.
    - (e) A decrease in the number of multiple-teacher departments.

Recommendations

1. This study of trends should be an annual project by the Department.
2. The project should be expanded to provide statistical tests of the significance of the variations noted by years.
3. This project should have an established budget.
4. Other vocational programs with teacher and program data on file should consider developing a similar program.

INTEGRATING TEACHING AND RESEARCH

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Good morning! In the presentation just concluded, I tried to utilize many of the characteristics, mannerisms and techniques one would not want to use in giving a presentation. I want to comment briefly on the importance of integrating teaching and research and do it in a more "presentable" fashion. In a university environment, I find the two inseparable. Quality teaching is our number one priority at Texas Tech. However, I have personally discovered that teaching and research do not always develop together. As director of research, I accept a role of promoting and enhancing the primary mission of teaching through specific research programs of individual faculty. I think that a successful quality teaching effort is enhanced by a vigorous research program. Individual faculty are encouraged to develop their own program of research which is as closely related to their classroom material as possible. The goal is to continually strive to develop the two together.

A sound, well planned research program for individual faculty is of immeasurable value to the faculty member involved and I offer the following reasons for my position. A well planned research program:

1. Enhances Professional Development.
2. Provides a First-hand Source of Classroom Material.
3. Provides a Source of Enrichment for Both Faculty and Students.
4. Allows for Graduate Student Training.
5. Improves the Professional Image of a Faculty Member Among his Colleagures, Both On and Off Campus.
6. Is a Source of Material for Publication Which is Vital for Consideration of Promotion and Merit Salary Adjustments as Well as for the Public Good.
7. Is an Activity Which invigorates the Faculty Member and Keeps Him/Her on the "Cutting Edge" of the Frontier of New Knowledge.

It has been my pleasure to be with you. Thank you for your attention.

BETTER TITLES AND ABSTRACTS

Matthias Stelly, Agronomy Journal, July 1963

A Good Title:

1. Identifies the subject matter field
2. Indicates the purpose of the investigation
3. Aids in proper indexing, thereby promotion of frequent usage
4. Contains key word early in title
5. Is concise, but complete; preferable only 6 to 10 words

Paper presented to the Southern Agricultural Education Research Conference at Texas Tech University, Lubbock, on July 21, 1981.

A Good Title Avoids:

1. Awkward or wordy construction, e.g., "Some observations on...", "Some characteristics of ...". "Progress report of studies on..."
2. Vagueness and incompleteness
3. Lengthy chemical nomenclature
4. Provocative words, nonspecific as regards subject matter content, such as "muddy waters" for "soil erosion control."

A Good Abstract:

1. States the purpose of the investigation
2. Indicates the scope of the work
3. Summarizes the contents of the paper
4. Points to new information and indicates research relevance
5. Reports all new significant methods, procedures, apparatus and theories
6. Includes a brief interpretation of results
7. Is generally limited to about 250 words

A Good Abstract Avoids:

1. Telegraphic style, i.E. sacrificing clarity for brevity
2. General and speculative statements about the contents
3. Lengthy discussion and conclusions

"The Principles of Poor Speaking"

(Since many of our members are preparing talks for our Annual Meetings in August, the following excerpts from a delightful, satirical article may be helpful in suggesting what they should NOT do. Written by H. F. Harding, professor of speech at Ohio State, the article was printed in The Scientific Monthly, January, 1948).

"Contrary to popular opinion, it is fairly easy to write or to speak well. But writing poorly and speaking poorly are really difficult. To give these arts their proper due requires hard study...The serious student of poor speaking should consider these first principles: (1) Make no preparation in advance. (2) Give the speech no order: let it ramble. (3) Avoid a conclusion. (4) Mumble words and don't look directly at the audience. (5) Never analyze an audience and never evaluate your performance.

Preparation is irksome and time-consuming. Therefore, don't prepare your speech until the night before. Better still, give it impromptu and do your preparing on the spur of the moment.

Never study your audience, and don't adapt your speech to their intelligence or interests. When you begin, don't bother to define any new technical terms. Throw out three or four new words at the start and give them unusal or unheard-of pronunciations. This will distinguish you as an erudite speaker.

Personal appearance has little relation to what an audience will think of you. Be sloppy in your dress, or be flashy, as you prefer. Stand directly behind the speaker's stand. Have the light adjusted so that it restricts the audience's view of you while you are speaking; then begin to mumble, holding your head in an attitude of reverence.

Try to cultivate a speaking rate of either 75 to 200 words a minute. Avoid 125 words per minute--it's a dull rate. And if you should enunciate distinctly, you gamble on having your hearers understand individual words.

When you use charts or diagrams, make them small and the lettering faint. Talk to the chart rather than to the audience. If you use slides, make certain that the projector does not function. This will allow you to make small sketches on the blackboard with your back to the audience while you talk in a low, confidential voice.

Do not exert your lung power. If you wish to succeed, speak so that the man in the back row wishes he were in the front row, the man in the front row wishes he were on the platform and the man in the middle row wishes he were back home. This is known as complete coverage.

Sketch out the speech. Repeat your points. Present the same idea in any number of different ways. Then backtrack and start all over. Never organize your speech--it's too confining.

Don't leave any time for questions or discussion at the end of the talk. But if you are caught unaware, give one or two curt, flippant replies and sit down. Sharp controversy, don't forget, becomes a speaker; and if someone should disagree with you, the weapons to use are sarcasm, disregard of the main point, argument ad hominem, and some ill-natured questions of your own in return.

Don't look at any books on speech organization or delivery. You will regret it if you seek advice on how to improve your speaking. If any one suggests that you have a recording made of your voice, shun the idea. You will be disillusioned and may even become so upset as to want to do something about improving your voice--always a dangerous symptom of incipient good speaking."

(P.S. A last note of caution: DO NOT HEED ANY of the instructions given in the ASA pamphlet "Why Not Excellent Papers -- They Can be Prepared.")

WHEAT PRODUCERS' AWARENESS, ATTITUDES, AND PRACTICES CONCERNING INTEGRATED PEST MANAGEMENT AND PRODUCTION PROBLEMS IN A FOUR-COUNTY AREA OF OKLAHOMA

Eddy Finley and James P. Key

INTRODUCTION/NEED FOR THE STUDY

The Oklahoma State University Division of Agriculture initiated an Integrated Pest Management (IPM) pilot project in wheat in a four-county area of north central Oklahoma in the fiscal year 1980. Included in the IPM pilot project were Kay, Grant, Garfield and Noble counties. The intensive production of wheat in this area and attendant pest and production problems caused this area to be a naturally desirable area for introducing an IPM program. Wheat, which occupies the largest number (approximately 1,226,000) of crop acres in this area, is routinely subjected to a variety of pest and production problems.

The primary purpose of this study (phase "one" of a two-phase project) was to determine a baseline awareness (of the wheat producers who resided in the four-county area) of the newly initiated OSU IPM program in wheat and, also, to determine the specific pest related problems they were confronted with in the production of their wheat. The "second" phase will involve a follow-up study to measure the change of the wheat producers' awareness of the OSU IPM program after it has been in operation for some time (approximately three years), thus the IMPACT of the IPM program will hopefully then be determined.

The results of this study should enable decision makers and leaders to effectively implement a comprehensive information delivery system concerning IPM. It should also provide a baseline study for future studies in Oklahoma and for other states to pursue similar approaches.

OBJECTIVES OF THE STUDY

1. To determine the wheat producers' awareness, attitudes, and practices concerning IPM.

2. To determine the wheat producers' sources of information concerning IPM.

3. To identify the major pest related problems the wheat producers encountered in the production of their wheat.

4. To determine the wheat producers' attitudes and practices involving the use of chemicals (herbicides and/or insecticides) for pest control.

5. To determine the general characteristics of the wheat producers.

METHODS AND PROCEDURES

A telephone survey was done of a stratified proportional random sample of the wheat producers' who resided in the four-county area of north central Oklahoma. A telephone structured interview schedule was developed including sections pertaining to the general characteristics of the wheat producer, wheat production problems, IPM and wheat production attitudes and practices. The schedule was refined and pretested to take from 5 to 7 minutes maximum time, be appropriate for the wheat producers to answer, and adequate to achieve the desired information as advised by the OSU IPM Steering Committee.

The population for this study was derived from the list of names and mailing addresses of farmers who resided and farmed in the four-county area of north central Oklahoma. The names and mailing addresses of the farmers were provided courtesy of the Cooperative Extension Service County Director from each of the four counties. A sample of 1,556 wheat producers was selected after determining this would give a 98% confidence interval based on a large population (2,885).

RESULTS

Findings and Conclusions

Most wheat producers: farm full-time, have produced wheat for more than 20 years, farm 800 acres of wheat or less, averaged 32 to 47 bushels of wheat per acre, have an estimated gross farm income of $50,000 or more (of which an estimated 60 percent or more came from the production of wheat), have had some college training, reside on the farm, produced wheat to sell the grain commercially, seldom are not familiar with their pest related problems, consult extension service personnel concerning pest related problems, considered climate to be the major problem affecting wheat production, considered "Cheat" to be the major weed problem, considered "Greenbugs" to be the major insect problem, considered "Soil Borne Mosaic" to be the major disease problem, had not heard of IPM, wanted additional information concerning IPM, preferred to be trained to check or scout their own wheat for pest related problems, considered the "OSU Yield Test Results" as the major factor influencing their selection of wheat seed, and considered themselves as the person who had the major influence pertaining to their farm management decisions.

Recommendations

As a result of the conclusions drawn from the analysis and interpretation of data, the following recommendations were made:

Oklahoma State University, in cooperation with the Oklahoma Cooperative Extension Service, should develop comprehensive training programs to train the wheat producers to check or scout their fields for pest related problems. It was further recommended that others (for example: 4-H Club members, FFA members, vocational agriculture teachers, and others involved in agricultural programs) be provided with information pertaining to IPM.

Although approximately one-half of the wheat producers surveyed consulted either the county extension agent or the extension service specialist, a large percentage depended upon their neighbors (other farmers) for advice concerning pest related problems. Therefore, it was recommended that some of the wheat producers receive training to become "paraprofessionals" in order to assist the county extension agent or the extension service specialist in training the wheat producers to check or scout their fields for pest related problems.

It was further recommended that the IPM program be directed toward the following major pest problems: Cheat, Soil Borne Mosaic and Greenbugs. Also, the IPM program in wheat should be expanded to involve more wheat producers in more counties.

Based on the conclusion that reading was the major source the wheat producer used in obtaining information pertaining to new farm practices, it was recommended that more information concerning IPM should be developed for release to newspapers and magazines.

Similar research should be conducted involving wheat producers from all wheat producing counties in Oklahoma and similar research should be conducted that would involve either other crop or livestock programs as potential target areas for IPM practices.

Specific research should be conducted to investigate the nature, extent, and potential for introducing trained "paraprofessionals" or independent private consultants to the farmers in order that new IPM programs could be implemented or existing IPM programs could be expanded.

TEACHERS' REACTIONS TO AND UTILIZATION OF THE NURSERY OPERATIONS MATERIALS

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INTRODUCTION

With the expansion of the ornamental horticulture industry there has been an increased need for trained individuals to meet the manpower demands of that industry. Vocational education programs were implemented for the preparation of individuals relative to a particular industry's needs. Therefore, a source of trained individuals for the ornamental horticulture industry is vocational education; and, more specifically the area of agribusiness and natural resources education. There are several programs in agribusiness and natural resources education that are primarily designed to prepare individuals for employment in the ornamental horticulture industry. Of those programs, nursery operations was the primary concern for this study.

For a particular educational program to be effective there needs to be suitable instructional materials available. In an effort to provide teachers of ornamental horticulture, and in particular nursery operations, with instructional materials that would meet their needs, the Florida Career Education Center developed a package of materials referred to as the Nursery Operations Materials.

Instructional materials need to be evaluated to determine the value of those materials as to their contribution to student growth, credibility, and practical considerations associated with the use of those materials. In order to assess the impact of the Nursery Operations Materials on the ornamental horticulture programs of agribusiness and natural resources education the Career Education Center plan called for an evaluation of the Nursery Operations Materials. This study was designed to serve as the basis for that evaluation. Furthermore, the information obtained would be used in making decisions about future development and modification of the Nursery Operations Materials. In addition, the results of this study would be useful in further development of competency-based curriculum materials.

OBJECTIVES OF THE STUDY

In order to meet those needs, the central purpose of the study was to determine the reactions of selected agribusiness and natural resources education teachers in Florida to the Nursery Operations Materials and identify how they used the materials.

To accomplish the central purpose the following objectives were developed:

1. Identify teachers' reactions to the Nursery Operations Materials in regard to several specified characteristics.
2. Identify how, with what program, and for what period of time teachers utilized the materials.
3. Determine if there was a correlation between teachers' reactions to the components and their ornamental horticulture experience.
4. Determine if there was a significant difference between how teachers were introduced to the materials and how they reacted to the Nursery Operations Materials and utilized those materials.
5. Determine teachers' preference for V-TECS materials or for Nursery Operations Materials.
6. Identify how the teachers rated V-TECS and Nursery Operations Materials as to ease of use, meeting student needs, presentation of materials, and organization.
7. Determine if there was a significant difference between how teachers who taught the nursery operations program utilized the Nursery Operations Materials and their ornamental horticulture experience.
8. Determine if there was a significant difference between the level at which the teachers taught and how they reacted to the Nursery Operations Materials and utilized the Nursery Operations Materials in the nursery operations program.

PROCEDURE

Data were collected by a mailed closed-form questionnaire. Of the 140 teachers sampled, responses from 105 teachers (75 percent) were received. Analyses of data for teacher reaction and utilization responses (objectives 1, 2, 5, and 6) included frequency distributions, percent responses, and means. Spearman's rank correlation coefficients were used to analyze objective 3. For objectives 4, 7, and 8 analysis of variance and Kurskall-Wallis non-parametric one way analysis of variance was used.

RESULTS

Findings

The major findings of this study were:

1. Teachers' reactions to the Nursery Operations Materials for seven characteristics were determined. The Dig Manual was identified as the highest rated component of the Nursery Operations Materials.

2. Teachers utilized the Nursery Operations Materials to varying degrees in the 11 different ornamental horticulture related programs studied. Nursery Operations was determined by teachers to be the program in which the Nursery Operations Materials were used to the greatest extent.

3. Teachers indicated a substantial preference for use of the Nursery Operations Materials over the V-TECS Materials.

4. No significant differences were determined between teachers' years experience employed in the ornamental horticultural industry, years experience teaching ornamental horticulture related courses, school level at which they taught, method in which they were introduced to the materials and how they reacted to and utilized the Nursery Operations Materials.

5. There was a weak negative correlation between the number of post-high school courses completed by teachers and their reactions to the Nursery Operations Materials. Those with fewer completed courses tended to rate the materials higher.

Conclusions

The following conclusions were drawn from the findings of this study:

1. The Nursery Operations Materials were used in varying degrees in all of the ornamental horticulture and other agribusiness and natural resources education programs of interest to this study.
2. Based on eight characteristics studied, it was concluded that teachers perceived the Field Guides, Unit Guides, and Workbook components of the Nursery Operations Materials slightly better than average in value. They rated the Dig Manual between above average and excellent in worth.
3. The Dig Manual was valued highly by teachers in regard to its use in other instructional programs.
4. Nursery operations was the primary program in which the teachers utilized the Nursery Operations Materials the most.
5. Teachers' ornamental horticultural experiences (post-high school ornamental horticulture courses completed, years employed in the ornamental horticulture industry, and years teaching ornamental horticulture classes) had little effect on how they reacted to and utilized the Nursery Operations Materials.
6. Teachers preferred to use the Nursery Operations Materials over the V-TECS Materials.
7. The methods by which teachers were introduced to the materials had no significant effect on their reactions to or utilization of the Nursery Operations Materials.
8. The level at which teachers taught had no significant effect on their reactions to and utiliztion of the Nursery Operations Materials.

Recommendations

Based on the findings and conclusions drawn from this study, the following recommendations are deemed to be appropriate:

1. The results of this study should be made available to personnel involved with instructional materials development for ornamental horticulture and other agribusiness and natural resources education program areas.
2. A study should be initiated utilizing an experimental design to study the impact of the Nursery Operations Materials on student achievement.
3. Dig Manuals should be made available in sufficient quantities for teachers of ornamental horticultural and other agribusiness and natural resources education programs.
4. Since the Unit Guide, Field Guide, and Workbook components of the Nursery Operations Materials were perceived to be just slightly better than average, modifications should be made prior to future duplication of the materials.
5. Decisions regarding modification and future production of the Nursery Operations Materials (with the exception of the Dig Manual) should be postponed until a student achievement study is completed.
6. The data from the recommended student achievement study and the data from this study should then be used in the decision making process relative to future production and modification of the Nursery Operations Materials (with the exception of the Dig Manual).
7. The least-cost method should be used to introduce the Nursery Operations Materials to teachers since there were not significant differences identified between the method of introduction to the materials and teachers' reactions to and utilization of the materials.
8. This study should be made available to persons conducting evaluative studies of instructional materials as a possible reference in formulation of research instruments.

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FOURTH SESSION

DETERMINING VOCATIONAL AGRICULTURE TEACHERS' ATTITUDES WITH REGARD TO THEIR HIGH SCHOOL STUDENT' SELECTION OF A COLLEGE OF AGRICULTURAL SCIENCES

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INTRODUCTION

With the increasing national shortage of vocational agriculture teachers, recruitment of students for Agricultural Education majors has become a priority in Texas universities. There is growing concern among public school administrators, state staff, and parents, that positions in vocational agriculture will not be staffed with qualified teachers. Indications are that vocational agriculture teachers make a lasting impression on students of vocational agriculture. With this in mind, a staff study was designed to elicit vocational agriculture teacher responses regarding their students' choice of a university. The study was completed in December, 1979.

OBJECTIVES OF THE STUDY

The primary objective was to determine attitudes exhibited by the vocational agriculture teachers when advising their vocational agriculture students as to which college or university to attend.

METHODOLOGY

The population consisted of 367 teachers of vocational agriculture, or all the vocational agriculture teachers in Areas I, II, and IV, which includes the Panhandle, West Texas, and 20 counties located in North Central Texas. A questionnaire was developed and mailed to collect data from the teachers. The questionnaire was developed by teacher educators and vocational agriculture teachers. It was pre-tested and revised before mailing.

The questionnaire and a cover letter were mailed to the vocational agriculture teachers. One-follow-up mailing was made. Two hundred and eight teachers responded for a response rate of 56.7 percent.

FINDINGS & CONCLUSIONS

1. The most frequently reported age category for the teachers was from 26 to 30 years. The mean age of the 208 teachers reporting was 36.75 years with a range of 22 to 66 years. The most frequently reported ages was 26 years. More than one half of the teachers had masters degrees. Forty percent of the respondents had taught from 1 to 5 years. Each teacher had counseled an average of 30 students.

2. Teacher attitudes regarding advisement of high school students concerning choice of a university was affected directly by the curriculum of the agricultural departments within a university. The teachers reported that curriculum was the most important item considered by the teacher when counseling students. Other important factors are jobs, cost, reputation, standards, faculty, part-time jobs, academics, scholarships, tradition, advertisement, entrance requirements, how vocational agriculture teachers are accepted on campus, appearance of university representatives, distance from home, size of the university, judging contests, and the degree of difficulty of the curriculum. Open ended responses indicated distance from home, curriculum and expense as the major factors considered by teachers and students when selecting a university.

3. Respondents indicated that improvement of rapport between vocational agriculture teachers and colleges of agricultural sciences personnel could be improved by personal contact, exibiting interest in students, becoming involved in related activities, and additional scholarships.

4. Seventy four percent of the vocational agriculture teachers felt that senior day was effective. Suggestions for improvement included smaller groups of students visiting at one time, letting students actually sit in a class, more college personnel available, improvement in tours, and improved publicity.

5. The teachers indicated that student interest in the departments of the College of Agricultural Sciences was ranked in the following order: Animal Science, Agricultural Education, Agricultural Engineering, Range and Wildlife Management, Plant and Soil Sciences, Agricultural Economics, Entomology, Park Administration and Landscape Architecture, and Food Technology.

6. The teachers advised students to attend junior colleges, senior colleges, trade or military schools, and out of state institutions. Of the senior colleges, Texas Tech, Tarleton State, Texas A&M and West Texas State were recommended most often.

7. Open ended responses indicated that recruitment could be enhanced by faculty representatives presenting slide presentations in the high schools. Teachers indicated that college students were more effective in high schools without the presence of faculty members.

RECOMMENDATIONS

1. The College of Agricultural Sciences administration and faculty should continue to update and revise the curriculum. Vocational agriculture teachers should be advised concerning job potential, cost, scholarships, and entrance requirements.

2. An effort should be made to improve rapport with vocational agriculture teachers by the administration and faculty of the College of Agricultural Sciences.

3. An effort should be made to improve senior day effectiveness.

4. Recruitment teams should be developed to go to the high school departments to present slide presentations regarding Agricultural Sciences.

5. The College of Agricultural Science administration should continue to employ well qualified and conscientious faculty, as well as, to continue to upgrade facilities.

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THE ROLE OF THE VOCATIONAL AGRICULTURE INSTRUCTOR AS A COMMUNITY LEADER OF AGRICULTURE

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INTRODUCTION/NEED FOR THE STUDY

In recent years many transitions have occurred in high school vocational agriculture programs in Mississippi. Federal legislation authorized the broadening of instructional programs to include training for agribusiness as well as a continuation and improvement of the production agricultural programs. The expansion of current programs and the establishment of new programs in agriculture have added new dimensions to the role of the vocational agriculture instructor.

The agricultural situation has changed drastically during the past few years. There is currently a national concern about scarcity of food, feed and fiber, and to the producer it is one of full production, higher prices, better prospects for profits and high marketing priorities in both domestic and international trade. Implications of the current and long-range situation in agriculture point to the need for competent and aggressive agricultural leaders.

Due to these recent developments in agriculture and transitions in publicly supported vo-ag programs, there is a need to study and analyze the role of the vo-ag instructor as a community leader of agriculture.

OBJECTIVES OF THE STUDY

The primary objective of this study was to analyze the role of the vo-ag instructor as a community leader of agriculture. Specific objectives are as follows:

1. Identify and determine the descriptive role of the vo-ag instructor as a community leader of agriculture.
2. Determine whether there are significant differences in the perceived role of the vo-ag instructor as a community leader of agriculture between vo-ag instructors and their administrators.
3. Analyze factors which inhibit or enhance the vo-ag instructor's role as a community leader of agriculture.
4. Determine whether there are significant differences in perceived factors which inhibit or enhance the vo-ag instructor's role as a community leader of agriculture between vo-ag instructors and their administrators.

METHODS AND PROCEDURES

Population

The population consisted of all 1980-81 Mississippi vo-ag instructors and their administrators (principal or vocational director).

Sample

A random sample, stratified by supervisory district, was selected. The sample consisted of 157 vo-ag instructors and their administrators for a sample total of 314.

Instrumentation

A demographic data questionnaire and a survey instrument were constructed and field tested for use in data collection. The demographic data questionnaire consisted of 37 items and the survey instrument consisted of three parts. Part I contained 55 items relating to the role of the vo-ag instructor. An 11-point likert scale ranging from "no importance" to "utmost importance" was used in responding to Part I. Part II contained 34 items which may influence the vo-ag instructor's role as a community leader of agriculture. An 11-point likert scale ranging from "greatly inhibits" to "greatly enhances" was used in responding to Part II. Part III consisted of nine instructor role areas. An 11-point likert scale ranging from "no importance" to "utmost importance" was used in responding to Part III. The values were then transformed to a 16-point scale.

Data Collection

Data were collected with a mailed questionnaire. A response rate of 70 percent was obtained for both groups.

Data Analysis

Frequencies, means and standard deviations were calculated on the instructor demographic data. Factor analysis and a t-test were used to analyze the data from the survey instrument.

RESULTS: FINDINGS, CONCLUSIONS, RECOMMENDATIONS

Findings

Ratings of Role Activities

The mean ratings ranged from a low of 6.10 to a high of 13.48. A rating of 8.0 would be "midpoint" or "average" importance on the 16-point transformed scale. All activities except the following received a mean rating of 8.0 or higher:

1. Serve on the town council.
2. Attend county board of supervisors meetings.
3. Serve as a superintendent at the county fair.

Activities which received a mean rating of 12.0 or above (upper quartile of the rating scale) and listed by mean rank are as follows:

1. Show a sincere interest in people and their problems.
2. Demonstrate professionalism in the community.
3. Assist in making the community a better place to live.
4. Make instructional visits to young farmers.

5. Advise and assist the FFA in conducting community activities and projects.
6. Strive to improve the image of farming and agribusiness.
7. Develop and implement a public relations program for the vo-ag department.
8. Promote community involvement in agricultural affairs.
9. Become an active member of a local church.

Ratings of Influencing Variables

Six variables were identified as inhibiting factors (mean of less than 8.0) and 28 variables were identified as enhancing factors (mean of more than 8.0). The six variables perceived to inhibit the vo-ag instructor's role are as follows:

1. Vo-ag instructor teaches classes other than vo-ag.
2. Vo-ag instructor has more than four class preparations each day.
3. Vo-ag instructor does not have a farm background.
4. Vo-ag instructor has supplemental occupation.
5. Vo-ag instructor teaches more than four day classes.
6. More than 60 students are enrolled in a single teacher program.

The variables perceived to enhance the vo-ag instructor's role, and receiving a mean response of 12.0 or higher are as follows (listed by mean rank):

1. Community is very supportive of vo-ag program.
2. Vo-ag instructor has rapport with community leaders.
3. School and community cooperate effectively.
4. Vo-ag instructor has the ability to budget and use time effectively.
5. Vo-ag instructor is competent in community leadership.
6. Community places high prestige on the position of vo-ag instructor.
7. Vo-ag instructor is competent in technical agriculture.
8. Leadership training has been provided vo-ag instructors.
9. Vo-ag instructor is self-motivated for community involvement.
10. Vo-ag instructor views community agricultural leadership as an important job responsibility.
11. Vo-ag instructor is actively involved in the total school program.
12. School board views community agricultural leadership as an important vo-ag instructor job responsibility.
13. Administration views community agricultural leadership as an important vo-ag instructor job responsibility.
14. FFA chapter is actively involved in community activities.

Group Comparison of Role Activity Factors

A factor analysis was used to identify factors for group comparisons of response ratings between vo-ag instructors and their administrators. A factor analysis of responses on the 55-item role activity survey yielded six factors.

No significant t-value was observed for any of the six factors identified. The factors ranked by total group mean factor score are as follows:

1. School/community relationships.
2. Adult education.
3. Community development.
4. Dissemination of agricultural information.
5. Cooperation with extension service.
6. Community organizations.

Group Comparison of Influencing Variable Factors

A factor analysis was also used to identify factors for group comparisons of influencing variable ratings between vo-ag instructors and their administrators. A factor analysis of responses on the 34-item inhibit/enhance activity survey yielded four factors. The factors ranked by total group mean factor score are as follows:

1. Views of ag. ed. personnel toward community agricultural leadership.
2. Value of vo-ag as perceived by school and community.
3. Additional compensation for community involvement.
4. Allocation of teacher time to inschool instruction.

A significant t-value of -2.43 ($p<.05$) was observed for the factor "allocation of teacher time to inschool instruction." Mean responses of 5.71 and 9.45 were observed for vo-ag instructors and administrators respectively. From this analysis it may be concluded that vo-ag instructors believed that an inadequate allocation of teacher time to inschool instruction was an inhibiting factor in performing their role as a community leader of agriculture. Whereas, their administrators did not perceive this to be an inhibiting factor.

Group Comparison of Instructor Responsibility Areas

Participants were asked to rate nine areas of responsibility as to the importance of each area in performing the job of the vo-ag instructor. The areas of responsibility ranked by total group mean rating are as follows:

1. Classroom instruction.
2. FFA advisor.
3. School faculty member.
4. Professional self-improvement.
5. Supervised occupational experience programs of students.
6. Community agricultural leadership.
7. Local agricultural program planning.
8. Adult education.
9. Vocational guidance and advising.

Mean ratings were significantly higher for vo-ag instructors than for administrators for the following areas:

1. FFA advisor ($p<.01$).
2. Adult education ($p<.01$).
3. Local agricultural program planning ($p<.01$).
4. Supervised occupational experience programs ($p<.05$).

The most important area of responsibility as perceived by vo-ag instructors is "FFA advisor," whereas the most important area as perceived by administrators is "classroom instruction." The responsibility area receiving the lowest importance rating was "vocational guidance and advising" and "adult education" for vo-ag instructors and administrators, respectively.

Conclusions and Recommendations

1. A mean rating of 8.0 or higher by vo-ag instructors and administrators for all but three of the 55 instructor role activities suggests that the vo-ag instructor does have an important role as a community leader of agriculture. There should be sufficient allocation of time and resources to perform this role.

2. To perform this role vo-ag instructors should strive to show a sincere interest in people and their problems, demonstrate professionalism in the community, assist in making the community a better place to live, and place high priority on community involvement.

3. The vo-ag instructor's role as a community leader of agriculture may be inhibited if assigned classes other than vo-ag, has more than four class preparations each day, teaches more than four day classes, or has more than 60 students enrolled in a single teacher program.

4. The most important variable perceived to enhance the vo-ag instructor's role as a community agricultural leader is the support the community gives to the vo-ag program. The vo-ag instructor must therefore be aware of the importance of good public relations for the vo-ag program.

5. Since no significant t-values were observed, it may be concluded that vo-ag instructors and their administrators generally agree on the importance ratings of the six role activity factors.

6. A significant difference ($p<.05$) was observed between vo-ag instructors and administrators for "allocation of teacher time to inschool instruction." The vo-ag instructors perceived this to be an inhibiting factor on their role as a community agricultural leader.

7. Significant differences in mean ratings between vo-ag instructors and administrators were observed for four of the nine instructor responsibility areas. The most important area of responsibility as perceived by vo-ag instructors is "FFA advisor," whereas the most important area as perceived by administrators is "classroom instruction." Therefore, it is imperative that vo-ag instructors strive to maintain the appropriate interrelationship among the FFA, inschool instruction and SOE. This important relationship should be communicated to the administration as well as to students, parents, and community members.

FACTORS AFFECTING ATTRITION OF STUDENTS IN THE PRODUCTION VOCATIONAL AGRICULTURE PROGRAMS OF TEXAS

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INTRODUCTION

Production vocational agriculture is by far, the largest segment of the Texas vocational agriculture program. Within the production program there are four years of instruction available to the agriculture student. Students must initially complete vocational agriculture I to become eligible to continue in vocational agriculture II, III, and/or IV.

There is an established enrollment trend in the production vocational agriculture program of Texas. The 1979-1980 enrollment figures illustrate this trend. During that year, there were 50,916 students enrolled in production vocational agriculture. Of this total enrollment, 23,888 students were enrolled in vocational agriculture I, 15,995 in vocational agriculture II, 8,133 in vocational agriculture III, and 2,900 students were enrolled in vocational agriculture IV. The enrollment in production agriculture III and IV was much lower than the enrollment in production agriculture I and II. This substancial loss of students from the production program is the problem investigated in this study.

OBJECTIVES OF THE STUDY

The primary purpose of this study was to determine the reason or reasons students enroll in production vocational agriculture I or production vocational agriculture I and II and then elect to discontinue their vocational studies in production vocational agriculture III and/or IV. In order to propose possible solutions to the problem of student attrition, the following study objectives were formulated:

1. To determine the career goals of those students surveyed.
2. To determine the levels of program participation among those students surveyed.
3. To determine the relationship of selected factors with the students' decisions to discontinue the production vocational agriculture program.
4. To determine the amount of influence the FFA and SOEP had upon the students decision to discontinue the production vocational agriculture program.
5. To determine the number of students surveyed who discontinued production vocational agriculture to take either cooperative

part-time training or pre-employment laboratory training.

6. To categorically classify and rank the reasons students dropped production vocational agriculture as listed by the surveyed students.

METHODS AND PROCEDURES

In a random sample, two hundred vocational agriculture teachers within areas I, II, and IV of Texas were contacted via mail and were asked to supply a list of students' names and addresses from their school, who within the last three years, had discontinued their production program before completing all production courses offered. A list of 300 students was obtained. These students were mailed a questionnaire designed to obtain the necessary data needed to answer the study objectives.

The information on the returned questionnaires was coded and entered into a remote computer terminal (Wylbur) in preparation for data analyses. A Statistical Analysis System (SAS, version 795) and a Statistical Program for Social Sciences (SPSS) program package was used in data analyses.

RESULTS

Findings

Initially, the student sample was descriptively analyzed to determine frequencies and percentages of sexual and racial groupings. These groupings within the sample were determined to be representative of the total population of production agriculture students in Texas. Also within the descriptive analysis of the sample was a determination of the participation levels of the students in various activities available to them during their production enrollment. The review of literature stresses the importance of FFA participation as a means of retaining students. Student participation levels within this study were found to be high, however, this factor did not have a positive nor negative effect on attrition.

The remaining data collection and analysis dealt with other relating factors regarding student attrition from production vocational agriculture. When students were asked to identify their future career goals, 53.10 percent of the sample indicated career goals which were classified as nonagricultural careers. It was also determined that 17.52 percent of the students who discontinued production agriculture were undecided in the area of career expectations. These findings were strengthened by a second portion of the questionnaire which asked the students if their future job plans included agriculture. Once again, 53.10 percent of the students indicated they did not plan to pursue an agricultural career.

Through the review of literature and consultations with high school vocational agriculture teachers, a group of eleven factors that influence students to discontinue production vocational agriculture were compiled and listed within the questionnaire for students to indicate the amount of influence each factor had on his or her decision to drop production agriculture. A five point Likert scale was used to determine the degrees of influence. Calculated mean values were obtained and the eleven influencing factors were ranked according to mean values as revealed in Table I. Also noted in Table 1 are the numbers of students who indicated the varying degrees of influence.

"Scheduling conflicts" were ranked as the most important reason students discontinue the production program. Non-agricultural related career goals ranked second and students entering cooperative part-time training ranked third among the influencing factors.

Supervised occupational experience program requirements were ranked within the top five influencing factors, however, the calculated mean values were low enough to consider this portion of the program as having little influence on the students decision to drop production agriculture. A small group of students (thirteen) who did not fulfill the SOEP requirements indicated this portion of the production program as having a greater amount of influence than the amount of influence indicated by the other students.

It is known that a portion of the students enrolled in production vocational agriculture I and II enroll in either cooperative part-time training or pre-employment laboratory training in their junior and/or senior high school years. Within this student sample, 18.2 percent entered cooperative part-time training and 1.6 percent entered pre-employment laboratory training.

The final portion of the questionnaire gave the students the opportunity to list, in their own words, the three most important reasons they dropped the production program. These listed reasons were classified and weighted values were calculated for each classification. After ranking the listed reasons, it was once again determined the most important reason students discontinue the production agriculture program was scheduling conflicts. The second most important reason for leaving the program was SOEP requirements which in this case was a combination of the monetary requirements and the program requirement of the production project. Students' interest in non-agricultural related career goals was ranked as the third most important reason.

Conclusions

Students decide to discontinue the production vocational agriculture program for many reasons, however, the most prevalent reason determined within this study was scheduling conflicts with other high school classes. Other factors of importance which influence students to discontinue the production program are: Student career goals in areas other than agriculture, students entering cooperative part-time training, and SOEP requirements.

The most important reasons students leave a production vocational agriculture program may vary within individual school systems however, the reasons presented within this research should be considered when examining the attrition of students in the production vocational agriculture programs of Texas.

Recommendations

After careful consideration of the findings of this study and examination of the analysis of data obtained, the following recommendations were formulated:

1. When developing a yearly schedule of classes, high school administrators and teachers should consider conflicting classes to enable students to enroll in classes which meet their needs and interests. Further investigation may be necessary to determine possibilities for improving high school scheduling.

2. Students who enter the production vocational agriculture program should have career goals and interest which relate to the subject matter of the program. It may be necessary to utilize student interest inventories to match the student's interest with the proper high school program. Vocational agriculture teachers should have planned career units of instruction incorporated in their vocational agriculture I curriculum.
3. Flexibility should be maintained within the supervised occupational experience program to accomodate special student situations. Vocational agriculture teachers must consider each student's interest and personal situation when counseling a student toward a particular production project.
4. When deciding on subject matter for local adaptation class time, vocational agriculture teachers must be able to adjust their instruction towards the special interests of the students.

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READER PERCEPTIONS OF THE AGRICULTURAL EDUCATION LEADERSHIP NEWSLETTER AS A COMMUNICATIONS MEDIUM

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Newsletters of similar publications are often used by Departments of Agricultural Education to communicate with professionals working as vocational agriculture teachers or Extension agents. The Department of Agricultural and Extension Education at Mississippi State University publishes the Agricultural Education Leadership Newsletter and issues it primarily to vocational agriculture teachers in Mississippi.

The Newsletter had been published bimonthly from the January-February 1979 issue through the November-December 1980 issue. Slight modification in the Newsletter format the style had been instituted over this two-year period. No attempt had been made to determine what opinions persons on the mailing list possessed regarding the Newsletter. Consequently, this investigation sought to answer the following question: What opinions do recipients hold regarding the Agricultural Education Leadership Newsletter?

OBJECTIVES OF THE STUDY

Specifically, the study sought to: (1) describe the demographic characteristics of persons receiving the Newsletter, (2) determine the extent that the Newsletter is read by persons on the mailing list, and (3) determine relationships existing between Newsletter characteristics and selected variables.

METHODOLOGY

The mailing list for the Newsletter consisted of high school and junior college agriculture instructors, teacher educators in agriculture, state supervisors of agricultural education, Mississippi State University administrators, and selected agribusiness professionals. For this investigation, the population was limited to the instructors, teacher educators, and state supervisors, and included 356 persons. The instructors were from Mississippi; the teacher educators and state supervisors were from other states. The head teacher educator at institutions and the head state supervisor in selected states were the persons on the out-of-state mailing list. A stratified random sample of 100 persons was selected for the study. Included in the sample were 70 high school vocational agriculture instructors, 15 teacher educators, eight state supervisors, and seven junior college agriculture instructors.

An instrument constructed by the investigator was used to assess selected demographic variables and perceptions the sample held about the Newsletter. This instrument was field-tested with faculty and graduate students in the Department of Agricultural and Extension Education at Mississippi State University to assess its content validity and had a Cronbach's alpha reliability coefficient of .71 (Hull and Nie, 1979). The instrument was mailed to the sample November 12, 1980 and after six weeks, a 77 percent response rate had been achieved. To determine if the nonrespondents were different from the respondents, six of the 23 nonrespondents were contacted by telephone to determine what percent of each issue of the Newsletter they read. These data were compared with that for individuals responding within the data collection period. A chi square of 7.15 (d.f.=4, p>.05) indicated that the respondents and nonrespondents were not significantly different.

FINDINGS

Demographic Characteristics of Respondents

More than 40 percent (42.7) of the respondents held masters as their highest degree while 24 percent held a bachelor's. Eighteen percent held doctorates and 11 percent educational specialist degrees. Those respondents holding an associate degree or no degree totaled four percent.

The mean age for respondents was 42 years. One-fifth of the respondents were in the 36-41 age group while 19 percent were in the 54-59 category. The 24-29 age category contained 17 percent and the 30-35 category 16 percent of the respondents.

A positively skewed distribution was found for the years of high school vocational agriculture teaching experience. The mean was 3.4 years and the mode three years. Persons with zero to five years of experience accounted for 28 percent of the respondents while another 28 percent were in the six to 11 years of experience category.

Newsletter Characteristics

The Newsletter was well-read as shown by 40 percent of the respondents indicating that they read all of each issue and 34 percent who read 75 percent of each issue. Respondents who read just half of each issue totaled 16 percent, those reading 25 percent equaled six percent, and only four percent of the respondents indicated that they did not read any of the Newsletter.

A monthly newsletter was desired by 68 percent of the respondents, 11 percent wanted a bimonthly newsletter, and 16 percent preferred a quarterly newsletter. Only five percent preferred a semi-monthly newsletter.

More than 40 percent of the respondents indicated that they wanted each issue of the Newsletter to contain four pages while 30 percent desired six pages. Just over eight percent desired an eight-page newsletter while 18 percent felt the Newsletter should contain as many pages as needed to cover all worthy news.

Three of every four respondents felt the Newsletter should be laid-out with two columns per page and 15 percent desired three columns per page. Only three percent of the respondents desired a newsletter with a single column.

State supervisors of agricultural education, vocational agriculture teachers, and teacher educators were desired as authors by 87 percent of the respondents and graduate students were preferred by 61 percent of the respondents.

Fourteen items were used to determine perceptions the readers held about the Newsletter. Respondents who read 25 percent or more of each issue were used in the analysis (n=74) and divided into three groups. Group 1 was composed of respondents who read 25 or 50 percent of each issue, Group 2 of respondents reading 75 percent, and Group 3 of respondents reading 100 percent. A coefficient of concordance of .89 (Nunnally, 1975, p. 293) indicated that the three groups were in high agreement on the rank order for the 14 items. The two highest ranked items concerned the Newsletter being easy to read and a Calendar of Activities section of the Newsletter which informs of major activities about which respondents need to know. The lowest ranked items concerned the Newsletter adequately covering technical agriculture subjects. A summary of this ranking is presented in Table 1.

Table 1

Means and Ranks for Selected Statements About the Newsletter
by Groups of Readers

	Group 1[a]		Group 2		Group 3	
Statement	$\bar{x}$	Rank	$\bar{x}$	Rank	$\bar{x}$	Rank
1. The Newsletter is easy to read.	3.35	3	3.62	1	3.58	1
2. The Newsletter informs me about Agricultural Education in Mississippi.	3.18	5	3.42	3	3.32	3
3. Articles in the Newsletter are the right length.	3.18	5	3.31	4	3.32	3
4. The Newsletter contains the right number of pictures.	3.12	7	3.00	8	3.03	8
5. The Mississippi Ag Ed Calendar of Activities section of the Newsletter contains the major activities about which I should know.	3.41	2	3.62	1	3.45	2
6. There should be a section in the Newsletter showing an illustration or drawing of a project suitable for students to construct.	3.59	1	3.27	5	3.29	5

Table 1 (continued)

Statement	Group 1[a]		Group 2		Group 3	
	$\bar{x}$	Rank	$\bar{x}$	Rank	$\bar{x}$	Rank
7. Each of the following subject matter areas is adequately covered in the Newsletter:						
a. Agribusiness	2.88	9	2.92	10	3.00	9
b. Agricultural Mechanics	2.88	9	2.85	13	2.87	13
c. Horticulture	2.82	11	2.77	14	2.90	12
d. Production Agriculture	2.82	11	2.89	12	2.94	11
e. Natural Resources (Forestry and Wildlife)	2.71	13	2.92	10	2.71	14
8. Articles on the Supervisory Staff Page inform me about activities in the State Agricultural Education Office.	3.00	8	3.00	8	2.97	10
9. I would miss the Newsletter if it were not issued.	2.53	14	3.15	7	3.19	7
10. Overall, I am very pleased with the Newsletter.	3.24	4	3.27	5	3.26	6

Coefficient of Concordance (W)=.89

Means: 1=Strongly Disagree, 2=Disagree, 3=Agree, 4=Strongly Agree

[a] Group 1 - Readers of 25 or 50 percent of each Newsletter issue (n=17)
Group 2 - Readers of 75 percent of each Newsletter issue (n=26)
Group 3 - Readers of 100 percent of each Newsletter issue (n=31)

Factors Associated With Newsletter Style, Content, and Format

Frequency of Issue. Respondents with limited years of high school vocational agriculture teaching experience desired that the Newsletter be issued more frequently than did respondents with more teaching experience ($r=-.30$, $n=74$, $p<.01$). Also, how frequently the respondents wanted the Newsletter issued was positively related to the type of degree held (^{r}pbi=.38, n=73, $p<.01$), with persons holding higher degrees wanting more issues per year.

Newsletter Authors. Respondents desiring that teacher educators write articles also wanted the following as authors: (a) state supervisory staff (phi=.70, n=74), (b) vocational agriculture teachers (phi=.54, n=74), and (c) graduate students (phi=.33, n=74).

Newsletter Readers. A low relationship was found between the amount of each issue that respondents read and whether or not high school vocational agriculture teachers wrote articles for the Newsletter (r_{pbi}=.27, n=74, p<.01). No other factor was found to correlate with the amount of each issue that the respondents read.

Informative Attributes. Whether the respondents felt the Newsletter informed of agricultural education in Mississippi was positively related to (a) the Newsletter containing the proper number of pictures (r=.41, n=73, p<.01), (b) articles on the Supervisory Staff Page informing of activities in the State Agricultural Education Office (r=.30, n=70, p<.01), (c) articles being the proper length (r=.39, n=74, p<.01) and (d) the following subject matter areas being adequately covered: agricultural mechanics (r=.42, n=67, p<.01), horticulture (r=.32, n=66, p<.01), natural resources (r=.41, n=67, p<.01), and production agriculture (r=.49, n=64, p<.01).

Artwork and Photographs. The higher the degree held, the less respondents wanted the Newsletter to contain a drawing or illustration of a project suitable for students to construct (Kendall's Tau C=-.31, n=70, p<.01). If the Newsletter contained the proper number of pictures, the respondents tended to feel that articles were the right length (r=.54, n=73, p<.01).

SUMMARY AND CONCLUSIONS

The major finding of this investigation was that the Agricultural Education Leadership Newsletter was easy to read and well-read by the respondents. Also, a monthly newsletter of four to six pages was preferred by the respondents. Newsletter authors desired included teacher educators, vocational agriculture teachers, state supervisory staff, and graduate students.

Respondents tended to agree that the Newsletter informed of agricultural education in Mississippi if it contained the proper number of pictures, had articles of the proper length, informed of activities in the state agricultural education office, and adequately covered technical agriculture. The findings of this investigation suggest that the Newsletter was an effective method of communicating with agricultural professionals, principally vocational agriculture teachers in Mississippi.

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THE INFLUENCE OF VERBAL AND NONVERBAL COMMUNICATION ON TEACHING EFFECTIVENESS

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INTRODUCTION

People have long recognized that total communication occurs in many ways. Among these ways are written words, spoken words and even communication without words. Most people are surrounded almost to the saturation point with communication. It is so commonplace that we tend to take it as much for granted as the air surrounding us. This aspect of extensive communication interchange is vital to educational classroom settings.

Extensive research has been conducted with the verbal (oral) communication interchange that occurs in classrooms. One of the first pioneers in this area was Ned Flanders who developed the Flanders Interaction Analysis Coding System.

In recent years additional research has been conducted in the area of communication without words or nonverbal communication and its influence on teachers communication within the classroom. Smith (1979) has noted that:

> During the past 15 years, an increasing amount of research has examined the influence of the nonverbal domain on interpersonal communication. Most of this work has been done by anthropologists, communication theorists, and psychologists, and usually the results have been of most immediate interest to those particular disciplines. Increasingly, however, the role of nonverbal communication has also been examined for its significance within educational settings.

It is possible to examine both verbal and nonverbal classroom communication in various ways and under various situations. The major purpose of this study will be to examine an analysis of both verbal and nonverbal communication as described by the following objectives.

OBJECTIVES OF THE STUDY

The major purpose of the study was to determine the use of verbal and nonverbal communication by agricultural education students at Virginia Tech. The specific objectives accomplished by the study were:

1. To determine the feasibility of monitoring and coding both verbal and nonverbal communication as used by pre-service agricultural education students.
2. To determine the change in the use of verbal and nonverbal communication with pre-service agricultural education students as they progress through the teacher education program.

3. To determine the relationship between teaching effectiveness and the use of verbal and nonverbal communication by a pre-service agricultural education student.

METHODS AND PROCEDURES

The methods and procedures for the study included aspects on sample, instrumentation, data collection and data analysis.

Sample

The sample consisted of 10 subjects who were enrolled in EDVT 3000 (introduction to agricultural education), EDVT 4030 (methods) and student teaching. Each student was videotaped while role playing a teaching situation in each class in which they were enrolled. The students were juniors and seniors in the Agricultural Education Program at Virginia Tech during the school years of 1979-80 and 1980-81. The sample consisted of seven males and three females.

Instrumentation

There were two instruments used for coding. One instrument was the Flanders Interaction Analysis Code which consisted of 10 codes for monitoring verbal interaction. The second instrument consisted of the Hillison-Crunkilton Non Verbal Interaction Analysis Code which consisted of 15 possible codes.

Data Collection

Data were collected by three trained coders monitoring the total of 30 videotapes. The tapes were monitored for a total of 10 minutes apiece.

One coder monitored and recorded verbal interaction. One coder monitored and recorded nonverbal interaction. The third coder observed both verbal and nonverbal interaction and recorded a criterion grade. Both the verbal and nonverbal coder also recommended a criterion grade.

Data Analysis

Numerous data analysis procedures were utilized. Among these procedures were frequency counts, means, Pearson Correlation Coefficient regression, and ratios.

RESULTS

Findings

The pre-service students in the study went from a verbal indirect/direct ratio of 0.063 in the junior level class to 0.229 in the methods class to 0.231 while student teaching. The subjects went from a verbal student/ratio of 0.025 in the junior level class to 0.148 in the methods class to 0.159 while student teaching. The pre-service students in the study went from a positive nonverbal/negative nonverbal ratio of 1.415 in the junior level class to 2.448 in the methods class to 4.475 while student teaching.

When the criterion grade was used as a dependent variable it was found that the coders were most influenced by the number of questions asked by the subject. The high six specific codes which had the greatest amount of accounted for variance as determined by regression were:

	Code	Variance
1.	Asks questions	.46
2.	Gestures (positive)	.08
3.	Space (positive)	.04
4.	Eye Contact (positive)	.04
5.	Student response to a question	.02
6.	Head nod (yes)	.01

Conclusions

Based upon the findings of the study the following conclusions can be drawn:

1. It is feasible to monitor and code both verbal and nonverbal communication as used by pre-service agricultural education students.
2. Pre-service students became more indirect in verbal teaching style as they progressed through the program.
3. Pre-service students became more student oriented as they progressed through the program.
4. Pre-service students used more positive nonverbal cues as they progressed through the program.
5. The coders were more influenced by the number of questions asked than any other code.
6. Four of the top six codes influencing the coders were nonverbal codes.

Recommendations

Based upon the findings and conclusions of the study it is desirable to make the following recommendations:

1. The study be continued with a larger sample size of pre-service agricultural education students.
2. The study be used with pre-service majors in addition to agricultural education.
3. More teacher educators be involved in a similar study to determine what specific aspects of teaching style most influence their grading of pre-service students in a teaching situation.

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FIFTH SESSION

DETERMINING THE SAMPLE SIZE: A RECURRING PROBLEM IN AGRICULTURAL EDUCATION RESEARCH

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A major question which faces the researcher in agricultural education is "How large should the sample be?" The answer is crucial if one recognizes the importance of sample size in determining statistical significance. As Hays (1963) noted: "Virtually any study can be made to show significant results if one uses enough subjects, regardless of how nonsensical the content may be" (p. 326).

The importance of sample size can easily be illustrated by an example. Suppose a researcher is interested in the difference between the test scores of students taught soils using two different methods of instruction. A group of students is randomly selected and the students are randomly assigned to experimental and control groups (equal numbers in each). At the end of six weeks of instruction, an achievement test is given to each group. The mean score of the experimental groups ($\bar{X}_e$) is 50.2, the mean score of the control groups ($\bar{X}_c$) is 50.1, and the estimated standard deviation(s) is 10. A t-statistic for independent samples is used to test the null hypothesis $H_o : \mu_e = \mu_c$ and the calculated t-value is 9.354. Examining the table for the t-distribution, this calculated value exceeds the tabled value, at the .01 level. Statistical significance is thus indicated, leading to the rejection of the null hypothesis. What sample size would be needed, using the above means and standard deviation, to give a t-value of 9.354?

The sample size in the above example can be calculated by recalling that:

$$t = \frac{(\bar{X}_e - \bar{X}_c) - (\mu_e - \mu_c)}{\sqrt{s^2 \ (1/n_e + 1/n_c)}}$$

Since $n_e = n_c$ in the above example and $\mu_e - \mu_c = 0$:

$$t = \frac{\bar{X}_e - \bar{X}_c}{\sqrt{s^2 \ (2/n)}}$$

Using the data given above

$$t = 9.354 = \frac{50.2 - 50.1}{\sqrt{100 \ (2/n)}}$$

$$n = \frac{(9.354)^2 (200)}{(.1)^2}$$

$$n = 1{,}750{,}000$$

Thus the sample size for *each* group would have to be 1,750,000. While the results are statistically significant, most anyone would agree that the sample is too large.

What about the situation where smaller samples are used? For example assume that

$\bar{X}_e = 56.2$

$\bar{X}_c = 50.6$

$s^2 = 100$

$t = 1.252$

Examining the table, a t-statistic of 1.252 is not statistically significant, even at the .10 level. Using this second set of data

$$t = 1.252 = \frac{56.2 - 50.6}{\sqrt{100\ (2/n)}}$$

$$n = \frac{(1.252)^2 (200)}{(5.6)^2}$$

$$n = 10$$

Thus, with a sample size of 10, a difference of 5.6 points (56.2 - 50.6) is not statistically significant even at the .10 level. Such results suggest the sample may be too small. How large, then,should the sample be?

METHODS FOR DETERMINING SAMPLE SIZE

Smith (1980) addressed the sample size question by examining several recommended procedures for determining the appropriate size. He concluded that there is no definitive answer to the question but there is much advice available.

An examination of research studies and doctoral dissertations indicates that a sampling procedure proposed by Krejcie and Morgan (1970) has become widely used. These individuals used a formula from *The National Education Association Research Bulletin* (1960) to calculate a table which shows the relationship between the population size and the sample size. Using the table requires no calculations and it is reported to be "applicable to any defined population" (Krejcie & Morgan, 1970, p. 607). The formula used in developing the table, which involved the use of the χ^2 distribution,is as follows:

$$n = \chi^2 NP(1-P) \div d^2(N-1) + \chi^2 P(1-P)$$

where

n = required sample size.

χ^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level [95%] (3.841).

N = the population size.

P = the population proportion (assumed to be .50 since this would provide the maximum sample size).

d = the degree of accuracy expressed as a proportion (.05) [enables one to be 95% confident that the population proportion is ± 5 percentage points of the sample estimate of the proportion].

Another formula for determining n in sampling for proportions was reported by Cochran (1953, p. 54). It involves the t distribution and, if $t = 1.96$ or t^2 (as used in the formula) $= 3.841 = \chi^2$ in the Krejcie-Morgan formula, the population proportion =.50 and the degree of accuracy =.05, the Cochran formula is comparable to the Krejcie-Morgan formula.

The above formulas, which deal with determining the sample size in sampling for proportions, require the following assumptions:

1. The size of the population is known.
2. The response measure is dichotomous (such as yes or no).

It appears from the literature that these formulas are being used while ignoring the second assumption. The result may be inappropriate sample sizes. What happens when one cannot meet the assumptions?

DETERMINING SAMPLE SIZE WHEN THE ASSUMPTIONS OF SAMPLING FOR PROPORTIONS ARE NOT MET

Suppose the size of the population is unknown. The procedure to follow involves testing the null hypothesis $H_o : P = .50$ (using $P = .50$ will maximize the sample size). Although the sampling distribution of the proportion is binomial, with a large sample size the normal distribution (z) is an adequate approximation of the binomial and is used as follows to test the hypothesis:

$$z = \frac{p - P}{s_p}$$

where

p = sample proportion possessing the characteristic.

s_p = standard deviation of the sampling distribution = $\sqrt{pq/n}$

P = population proportion.

q = 1-p = sample proportion not possessing the characeristics.

n = sample size.

$(p-P)$ = d = accuracy level.

To illustrate the use of the above formulas, how large would the sample need to be for Harris or Gallup to be 95% confident ($1-\alpha = 1 - .05 = .95$) that the proportion of farmers who support ERA is ± .04 (4 percentage points) of the sample proportion. The sample size can be estimated, using $p = .50$, $z = 1.96$ (95% confidence level) and $p-P$ or $d = .04$, as follows:

$$z = \frac{d}{\sqrt{p\ (1 - p)/n}}$$

$$1.96 = \frac{.04}{\sqrt{(.50)\ (.50)/n}}$$

$$n = \frac{(1.96)^2\ (.50)(.50)}{(.04)^2}$$

$$n = 600.25 \text{ or } 601$$

This means that an $n = 601$ would give the accuracy level and confidence level desired without knowing the size of the population.

What if the population size is unknown and the response measures or data are interval? For example, one wishes to estimate the IQ of entering freshmen within ± 2 points (d, the accuracy level) at the 95% confidence level. Previous studies have indicated that the estimated standard deviation $s = 15$. The approach to use involves the t-statistic ($t = 1.96$ at 95% confidence level with infinite degrees of freedom) as follows:

$$t = \frac{\bar{X} - \mu}{\sqrt{s^2/n}} = \frac{d}{\sqrt{s^2/n}}$$

$$1.96 = \frac{2}{\sqrt{(15)^2/n}}$$

$$n = \frac{(1.96)^2\ (15)^2}{(2)^2}$$

$$n = 216.09 \text{ or } 217$$

A sample size of 217 would thus give the accuracy level and confidence level desired without knowing the size of the population and with the use of interval data.

Suppose there are two groups involved and the response data are interval. There is a desire to estimate the difference in IQ between two groups of unspecified sizes and an acceptable difference is 2 points (d) at the 95% confidence level. The estimated standard deviation $s = 15$. The t-statistic for two independent groups is used as follows (assuming equal sample sizes):

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{s^2\ (2/n)}} = \frac{d}{\sqrt{s^2\ (2/n)}}$$

$$1.96 = \frac{2}{\sqrt{(15)^2\ (2/n)}}$$

$$n = \frac{(1.96)^2\ (2)\ (15)^2}{(2)^2}$$

$$n = 432.18 \text{ or } 433$$

Thus, a sample in *each* group of 433 students would give the accuracy and confidence levels desired.

The discussion above has involved one group or one sample and two group or two sample cases with dichotomous and interval data. The general formula for determining n for one group cases is as follows:

$$n = \frac{(\text{Confidence level } t\text{-value})^2\ (\text{Variance})}{(\text{Accuracy level})^2}$$

where

$t = 1.96$ for 95% confidence level

s^2 = variance interval data

$p(1-p)$ = variance for dichotomous data

Accuracy level = acceptable difference between sample proportion or mean and population proportion or mean.

If more than two groups or two samples are involved, such as in analysis of variance designs, the procedures require the use of the Pearson-Hartley power charts and is beyond the scope of this paper. The power charts and procedures for using them may be found in many references such as Kirk (1968).

DETERMINING THE SAMPLE SIZE WHEN LIKERT SCALES ARE USED

Up to this point, the response measure has been either dichotomous or interval. What if Likert-type scales are used as is frequently the case in agricultural education research?

The question arises because Likert scales are not dichotomous and they are not true interval (although usually assumed to be and this is generally a workable assumption). Recognizing this problem, Elliott (1980) has devised a formula to estimate the sample size needed for Likert-type data which is as follows (p. 11):

$$\text{Needed Sample Size} = \frac{(\text{Range}/2)^2}{(\text{Accuracy level}/\text{Confidence level } t\text{-value})^2}$$

where

Range = number of intervals on response scale and is equal to the number of points minus one; if there is a mixture of response scales, take the longest one, count the number of points and subtract one; this formula gives a standard deviation which is ½ of the range and the largest it could be.

Accuracy level = acceptable difference between the sample mean and the population mean in terms of scale points.

Confidence level *t*-value = 1.96 for the 95% confidence level and 2.58 for the 99% confidence level

To illustrate the use of the above formula, assume that a 6 point scale is used on all the items (it does not matter how many items are used). The range for this is 5 and, assuming an accuracy level of .25 and a confidence level *t*-value of 1.96, the needed sample size would be found as follows:

$$\text{Need Sample Size} = \frac{(5/2)^2}{(.25/1.96)^2}$$

$$= 384.17 \text{ or } 385$$

One very important point mentioned by Elliott is that "The sample size you develop from this formula is the number of *returned, usable surveys* you will need" [this applies as well to all other formulas mentioned in this paper] (p. 12).

The Elliott formula above is for the one group or one sample case. How does it differ from the general formula for the one group case presented earlier? Actually it does not since the $(\text{Range}/2)^2$ = the variance and one formula can be transformed into the other by algebraic manipulation.

COMPARISON OF THE SAMPLE SIZE USING THE PROPORTION FORMULA VS. THE LIKERT SCALE FORMULA

Does it make any difference if the proportion formula (Krejcie-Morgan or Cochran) is used when the Likert formula appears to be more appropriate? An actual example will be useful in making this determination.

Johnson (1980) desired to sample 3862 vocational agriculture program completers. He used the Cochran formula to determine the sample size, even though the survey instrument involved 26 items rated on a five point Likert scale. The sample size, based on a 95% confidence level and .05 accuracy level, was determined to be 350. Using the Elliott formula

$$\text{Needed Sample Size} = \frac{(4/2)^2}{(.20/1.96)^2}$$

$$= 384.17 \text{ or } 385$$

Therefore, the Elliott formula gave an estimated sample that was 10% larger than the one determined by the Cochran formula. Johnson gave no rationale for using the population proportion of .50 in the formula.

SUMMARY AND CONCLUSIONS

The size of the sample is an important factor in determining statistical significance. Several procedures have been recommended for estimating the sample size needed but no definitive answers have been given to the question of how large the sample should be.

Some procedures were discussed in this paper which related sample size determination to the number of groups involved, the type of response measure used, and the accuracy and confidence levels desired. Hopefully, the discussion will provide agricultural education researchers with an increased understanding of the factors involved in determining the sample size. If the appropriate sample sizes are selected and used, the credibility of research in agricultural education will be greatly enhanced.

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GRANTSMANSHIP

There are several essential requirements for obtaining funding for research in Agricultural Education.

1. Find some money (universities, state departments of education, U. S. Department of Education, NIE, other governmental agencies, and private foundations).

   Don't waste time writing proposals topeople who don't have funds.
2. Match what you want to do to what the potential funding source wants done.
   a. This may mean that we need to compromise some on what we want to do. If you will notice, researchers who are being funded are researching problems that apply to all of vocational education, to youth in general, or to some instructional technique or curriculum development activity which applies to a large audience. We can, though, work with other states, with other universities and other vocational service areas, e.g. 4-H Study and Kellogg Foundation.

   If we don't do this, we will sit by and let some Belt-way bandit outside Wasington, D.C. develop inadequate curriculum, e.g. for all of vocational education.
3. Show that you are capable of doing the job. Government funding agencies are bureaucrats who want to look good and want researchers who will make their job easy. Private foundations usually have statements of purpose which are broad and which require research that will influence or help a publically recognized problem or groups, etc. For example, R. J. Reynolds supports the BOAC program because it helps youth and communities. BOAC projects are noticeable!

   We can look more capable of doing the research by:
   a. Showing prior research experience, possibly some out-of-the-hide research, however the project director should show the experience of managing a budget and managing people.
   b. Better yet, show preliminary research related to the research topic proposed.
   c. Getting to know the people in charge.
   d. Including evidence that we are knowledgeable of the topic, e.g. WEEA.
   e. Is written for the reader, e.g. a proposal which involves all of vocational education will be read by a general votee person, such as Rupert Evans. He will "look for" a proposal which is consistant with his philosophy.

Things To Do

1. Develop consortia, e.g., the Southern Region Study.
2. Identify and prioritize reserach needs, then see who we can join with to better justify funding, or to better match what the funding source wants.
4. Write a good proposal. But there are different types of proposals and awards.
   a. Preproposal - required by some agencies, recommended by some,

and not accepted by others.

A pre-proposal is usually 3-5 pages and includes objectives, project plan, budget, staff and facilities. This lets the applicant know whether to write a full proposal, submit a modified pre-proposal required, we should still make contact with funding sources to see if our idea is in line.

b. Formal proposal - this is a full-blown, detailed legal document, usually reviewed externally for relevance and scientific/technical merit.

c. RFPs or Requests for Proposals for contracts.
Contracts are different from grants and the RFP explicitly details what is to be done. The proposal than is not very flexible. There are also unsolicited contracts.

d. Grants are more flexible and allow the researchers to proceed with a general gold and minimum of restrictive guidelines.

GRANTSMANSHIP RESOURCES

Federal Support

Catalog of Federal Domestic Assistance. Washington, D.C.: U.S. Government Printing Office.

Compiled and published annually by the Office of Management and Budget. It includes every program run by the executive branch of the U.S. Government that offers help to the American public. The catalog is a Government-wide compendium of federal programs and activities which provides information on federal programs, types of activities what have been funded, eligibility requirements, types of assistance, restrictions on the use of assistance and contacts, including the administering office.

Guide to Department of Education Programs. Reprinted from *American Education*. Washington, D.C.: U.S. Government Printing Office.

Annual publication of the Department of Education describing the authorized legislation, appropriation, and type and purpose of existing financial assistance.

The Guide to Federal Assistance. Published monthly by Wellborn Associates Inc., 5791 Beaumont Avenue, La Jolla, Calif. 92037.

Guide to federal assistance programs. Cross referenced by agencies, deadline dates, eligibility requirements, public laws, and program names.

The Federal Register. Washington, D.C.: U.S. Government Printing Office.

A daily publication that often includes notices of government grant programs. Should be consulted regularly.

The Commerce Business Daily. Washington, D.C.: U.S. Government Printing Office.

Published every business day by the Commerce Department. It is a daily list of U.S. Government procurement invitations, contract awards, subcontracting leads, sales of surplus property and foreign business opportunities. It relates more to contracts than grants, and in federal contracts the problem has already been identified and the potential researcher would be simply bidding on conducting the R&D activity to someone else's specifications. There are not many items that relate to education, but there are enough to merit its utilization.

Presented at 30th Annual Southern Research Conference in Agricultural Education, Lubbock, Texas, July 21-23, 1981 by Don R. Herring, Texas A&M University, College Station, TX 77843.

Federal Grants and Contracts Weekly. Washington D.C.: Capitol Publications, Inc.

A weekly listing of selected project opportunities for the education community.

State Support

At the state level, the primary source of funding for R&D would be the State Education Agency. In Texas, the Research Coordinating Unit (RCU) in the Department of Occupational Education and Technology of The Texas Education Agency has five program areas: research, exemplary, curriculum, guidance and personnel development. Normally, proposal guidelines and priorities are available in January with proposals due in March. Specific dates are announced each year.

Possibilities for funding specific kinds of R & D activities might also exist in other state agencies, such as the State Rehabilitation Commission and the Department of Human Resources.

Foundation Support

The Foundation Directory. 7th edition. Irvington, New York: The Foundation Center, 1979.

This is the standard reference publication for information about non-governmental grant-making foundations. Describes over 2800 of the largest U.S. foundations and includes application procedures. Foundations are listed alphabetically by state.

Foundation News. Published bimonthly by the Council on Foundations, Inc., 1828 L. St. NW, Washington, D.C 20036.

Contains news and articles on foundation giving, pending legislation and tax matters, and new developments in foundation programs. Includes a comprehensive listing in each publication of the grants awards made by the foundation over recent weeks.

The Foundation Grants Index. Included as a separate section in Foundation News.

Includes detailed summaries of grants over $5000 made by over 300 major foundations. Serves as a good indicator of current foundation interests.

Miscellaneous Support

Annual Register of Grant Support. Marquis Academic Media, 200 East Ohio Street, Chicago, Illinois 60611.

Describes the grant support programs of government agencies, public and private foundations, corporations, community trusts, unions, educational and professional associations, and special interest organizations.

The Grant Information System. Oryx Press, 3930 East Camelback Road, Phoenix, Arizona 85018.

Gives current information about grant programs available from Federal and state governments, private foundations, associations, and corporations. The information is arranged by academic discipline. Included is the Faculty Alert Bulletin (FAB) which is received every month. The FAB lists grant programs for which proposals are due in the next six months.

Chronicle of Higher Education. Published weekly except the first week in January the first three weeks in August, and the last two weeks in December by the Chronicle of High Education, Inc., 1333 New Hampshire Avenue, N.W., Washington, D.C. 20036.

Provides status of legislation, foundation and grant news, and grant application deadlines.

The Grantsmanship Center News. Published 6 times per year by the Grantsmanship Center, 1015 West Olympic Blvd., Los Angeles, California 90015.

The Grantsmanship Center is a nonprofit, tax exempt, educational institution. The publication covers grantsmanship training programs, publications, and making grantsmanship more professional. Includes funding notes, deadlines, and federal regulations.

Grants Magazine. Published quarterly by Plenum Publishing Corporation, 227 W. 17th St., New York, NY 10011.

Features include Program Alert; Conferences, Seminars and Workshops; Focus on Washington; The Grants Clinic.

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REPORTS FROM STATES

Research in Progress

REPORTS FROM STATES

Research in Progress

ALABAMA

Auburn University

"The Effects of State Anxiety As Produced by Orthopedic Simulation on Attitudes of Pre-Service Agribusiness Teachers" Doctoral Dissertation. M. Russell Avery.

"Administrative Model for the Incorporation of Performance Based Instructional Modules into University Vocational Education Professional Development Programs" Research and Development Grant, Alabama State Department of Education, $12,000. Richard A. Baker and S. Tracy Trussell.

"The Effects of Field Application of MicroTeaching During Internship on the Achievement Level of Interns" School of Education Research Assistance Program Grant 2-12763, $850.00. Staff study. M. J. Iverson and C. Ann Graham.

"A Study of Sexual Pressures in SE Public Institutions and Agencies Concerned with Vocational-Technical Education" Phi Delta Kappa grant, $1,000.00. Staff study. M. J. Iverson.

"Comparative Status of Agricultural Teacher Education Programs When Administered under Different Colleges at Public Universities in the United States. Staff study. M. J. Iverson and Joseph Befecadu.

"Profile of Young and Adult Farmers Currently Enrolled in Young Farmer Programs in Alabama" Staff study. Jim Johndrow.

LOUISIANA

Louisiana State University

"Follow-up of Vocational Agricultural Education Graduates and Evaluation of Their Training." Staff Study. Kotrlik, Joe W.

"The Effective Use of Adult Programs, Occupational Experience Programs, and Advisory Committees in High School Vocational Agriculture/Agribusiness Programs." Staff Study. Kotrlik, Joe W.

"Effective Use of Advisory Committees in Secondary Vocational Education Programs in Louisiana." Staff Study. Kotrlik, Joe W.

"Role Perceptions and Factors Influencing the Actual Role of Teachers of Vocational Agriculture in Louisiana." Staff Study. Smith, Charles W.

"Selected Characteristics of Secondary Vocational Horticulture Programs in Each of the Four FFA Regions." Staff Study. Smith Charles W.

"Updating Teaching Materials for Education in Vocational Agriculture." Staff Study. Smith, Charles W.

"Cooperative Relationships Between County Extension Agents and Vocational Agriculture Teachers in Louisiana." Doctor Dissertation. Buddle, Donald A.

"Comparison of Individualized Instruction and Group Instruction Methods in Basic Vocational Agriculture Classes." Doctor Dissertation. McCully, James S. Jr.

"Attitudes Held by Selected Public School Administrators in Louisiana Towards Vocational Education." Doctor Dissertation. Miller, Paul Gibson.

"Socioeconomic Status of Educable Mentally Retarded Graduates of Special Education Programs in the State of Louisiana." Doctor Dissertation. Rawls, Daniel R.

"Professional Competencies Needed, Levels Attained, and Training Sources as Perceived by Vocational Agriculture Teachers." Doctor Dissertation. Saladage, Fe S.

MISSISSIPPI

Mississippi State University

"Role of Extension Agents in Jordan" Doctoral Dissertation. Baqqin, Akram.

"Long Term Teacher Preparation Programming for Agricultural Education in Mississippi." Funded Study. Brown, Ronald A.

"Development of Handbooks for Teachers of Vocational Education in the Areas of Teaching Diverse Agroups, Teaching Special Needs Students, Discipline, and Motivation." Brown, Ronald A.; Lee, Jasper S.; Bowen, Blannie; and Kittrell, David.

"Diffusion and Adoption of Selected Agricultural Technology in Mississippi." Funded Study. Byler, Ben and Cantrell, Joy.

"Relationship of Organizational Management and Structure to Job Satisfaction and Morale of Extension Agents in Mississippi." Doctoral Dissertation. Cantrell, Joy.

"A Five-Year Followup of Graduates of the Department of Agricultural and Extension Education at Mississippi State University." Staff Study. Kittrell, David.

"The Effect of Inservice Education on the Programming Practices of County Agricultural Agents in Mississippi. Doctoral Dissertation. Monaghan, Tom.

"A Study of the Effectiveness of Two Instructional Methods in Agricultural Mechanics in Mississippi." Doctoral Dissertation. Perritt, Dale.

"Research Needs in the Cooperative Extension Service in the United States." Doctoral Dissertation. Susang, Susan.

OKLAHOMA

Oklahoma State University

"Expectations of the Vocational Agriculture Program in the Indianola Community." M.S. Report. Brashears, Kendall Bueford.

"A Study of Teacher Changes Among Vocational Agriculture Teachers Within the State of Oklahoma From July 1, 1975 to June 30, 1979." M. S. Report. Clapp, Joe David.

"Competency Bases for an Agricultural Education Program for the College of Micronesia." Doctoral Dissertation. Dayrit, Ruben Serrano.

"Wheat Producers's Awareness, Attitudes, and Practices Concerning Integrated Pest Management and Production Problems in a Four-County Area of Oklahoma." Doctoral Dissertation. Finley, George Edward.

"An Assessment of Agricultural Mechanics Safety Instruction Conducted at Agricultural Teacher Education Programs Across the United States." Doctoral Dissertation. Forsythe, Steven William.

"Occupational Decisions Made by Yukon State Farmers From 1938 Through 1980 and Selected Information Related to Those Decisions." M.S. Report. Goodson, Verlin Ray.

"Impact of Selected Influencers on Decisions to Attend Oklahoma State University and Major in Agriculture." M. S. Thesis. Graham, Terry Glenn.

"The Desirability of and Implications for a Co-Curricular Agricultural Student Organization in Jamaica." M. S. Thesis. Gray, Reuben Carlton.

"Possible Adaptations in the Functions of Secondary Agricultural Education to Enhance Rural Community Development in Venezuela. M. S. Thesis. Lacruz, Pedro Fillipe.

"Comparison of Current and Projected Administrative Personnel Preparation, Needs and Practices for Adult Vocational Education Programs Within Oklahoma's Area Vocational-Technical School System." M.S. Report. Metcalf, Wayne Kent.

"Perceptions of Cocoa Farmers and Extension Agents in Nigeria Concerning Production Practices with Implications for Mutual Working Relationships." M.S. Thesis. Nidfon, Henry Mbeh.

"Perceptions of Oklahoma Residents Toward the Instructional Function of the Oklahoma State University Division of Agriculture." Doctoral Dissertation. Randle, Thomas Earl.

"Expectation of the Vocational Agriculture Program in the Indianola Community." M.S. Report. Walden, Sam Gene.

"Teacher/Administrator Utilization of Recommended Guidelines for Summer Vocational Agriculture Programs in Area I of Texas." Doctoral Dissertation. Williams, Randall Harold.

"The Feasibility of Dairying in the Niger Delta Area of Nigeria." M.S. Report. Yorama, Moses T.

TEXAS

Texas A&M University

"Identification of Competencies Needed by Agricultural Education Graduates Employed in Non-School Settings. Herring, Don R.

"Follow-up of Exited Students From the College of Agriculture at Texas A&M University. Briers, Gary.

Texas Tech University

"An Assessment of Vocational Agriculture Programs as Perceived by Female Students." Texas Education Agency. Cepica, M. J.

"Development of Future Farmers of America Training Material for Students of Vocational Agriculture." Houston Livestock Show and Rodeo Funded. Cepica, M. J.

"Determining Vocational Agriculture Teacher Attitudes With Regard to Adult Education in Agriculture." Staff Study. Crites, James R.; Cepica, M. J.; and Stockton, Jerry.

"An Assessment of Vocational Agriculture Teacher Inservice Needs." University funded. Dillingham, John M.

"The Association of Selected Characteristics with the Average Net Income From Supervised Project Programs of Production Agriculture Students in Texas High Schools." Doctoral Dissertation. Dillingham, John M.

"Factors Affecting Attrition in Production Vocational Agriculture Programs in Texas." University Funded. Pate, Dennis C. and Cepica, M. J.

VIRGINIA

Virginia Polytechnic Institute and State University

"Agricultural Education for Rural Development in Virginia." Staff study. Camp, William.

"Competency Based Revision of Virginia Tech Agricultural Education Undergraduate Curriculum." Staff study. Camp, William.

"Teacher Responses to Student Discipline Problems." Staff Study. Camp, William.

"The Status of Preservice Preparation Training Programs Concerning Vocational Advisory Committees and the Preparation of Teachers and Administrators to Work with Such Councils." Staff study. Clouse, James P.

"How are Teachers Using Questioning in the Classroom?" Staff study. Ray Herren and John R. Crunkilton.

"Role of the National FFA Organization in Assisting Local FFA Chapters: Implications for the 1980's." Doctoral Dissertation. Damann, Alan.

"Factors Related to the Success of Participation in the National FFA Livestock Judging Contest and the National FFA Floriculture Contests in 1981." Doctoral Dissertation. Herren, Ray.

"The Influence of Verbal and Nonverbal Communication on Teaching Effectiveness." Staff study. Hillison, John.

"The Relationship of Selected Factors to the Attitudes of Easter Region Secondary Agricultural Education Teachers Toward the FFA." Doctoral Dissertation. Lyons, Dan.

"Attitudes of Flue-Cured Tobacco Producers Toward the Virginia Cooperative Extension Service." Doctoral Dissertation. Lyons, Lorenza.

"Use of School Farms in Panama." Staff study. McMillion, Martin B.

"A Study to Determine a Core of Agricultural Mechanics Competencies for Vocational Agriculture Teachers." Doctoral Dissertation. Polson, Karl.

"The Job Satisfaction of State Officials with Responsibilities for Programs of Vocational Education in Agriculture: A National Study." Doctoral Dissertation, H. M. Snodgrass.

"A Systematic Method for Determining In-Service Educational Needs of Agricultural Education Teachers and Cooperative Extension Agricultural Agents in Virginia." Doctoral Dissertation. Turner, C. V.

"Agricultural Program Survey of Community/Junior/Technical Colleges." Staff study. Garrison, James M. and Vogler, Daniel E.

BUSINESS SESSION

BUSINESS MEETING

Minutes

The business meeting of the 30th Annual Southern Research Conference in Agricultural Education was called to order on July 23, 1981 at 10:50 a.m. Marvin Cepica and Larry Jewell co-chaired the meeting.

1. Ben Byler, Mississippi, moved and John Hillison, Virginia, seconded to dispense with the reading of the minutes of the previous meeting. The motion passed and the minutes of the business meeting of the 29th Annual Southern Research Conference in Agricultural Education were approved as printed in the 29th Annual Conference proceedings.

2. Maynard Iverson, Alabama, presented the report of the Nominating Committee. The following slate of officers were presented for the 1981-82 year:

   Chairman: Ira Dickerson, University of Georgia
   Chairman Elect: Larry Jewell, North Carolina State University
   Secretary: John Hillison, Virginia Polytechnic Institute and State University

3. Dr. Iverson also reported that the states offering invitations for the next three years were:

   1982 - Georgia
   1983 - North Carolina
   1984 - Virginia

4. The dates for the 1982 Conference were set as July 21-23, 1982.

5. Chairman Cepica indicated that a motion was passed at the business meeting of the 29th Annual Conference, indicating that the Chairman would appoint a committee of four (4) to meet at least one month prior to the 1981 Conference to study the directions the Conference should take in the future and make a report to the business meeting of the 1981 Conference. Chairman Cepica then informed the group in attendance that a committee had not been appointed; thus, a report could not be given at the 1981 business session. After brief discussion on the topic, Maynard Iverson, Alabama, moved and Joe Kotrlik seconded, that a committee of four be appointed by the Chairman to meet at the 1981 AVA Convention and report to the business session of the 1982 Southern Research Conference in Agricultural Education. The motion passed. Chairman Cepica named the committee as follows: John Hillison, Virginia, Chairman; Earl Knebel, Texas; Jimmy Cheek, Florida; and Charles W. Smith, Louisiana.

6. Joe Kotrlik requested that any changes which needed to be made regarding the report on the history of the conference which he presented at the First General Session of the Conference be forwarded to him by September 1, 1981.

7. Jimmy Cheek, Florida, moved and Dale Oliver, Virginia, seconded that Donald R. Herring, Texas, and Joe Kotrlik, Louisiana, be appointed as conference historians. The motion carried.

8. Chairman Cepica introduced the faculty and staff from Texas Tech and extended special recognition and thanks to them and all others who had assisted in planning and conducting the conference.

9. The following resolution was presented by Larry Jewell, North Carolina:

   "Since research in Agricultural Education is important and necessary to the improvement of the profession, and since a research conference is advantageous in sharing research findings and techniques;

   Therefore, be it resolved that the participants of the 1981 Southern Research Conference in Agricultural Education commend and express appreciation to the Texas Tech Agricultural Education faculty, staff, and spouses who participated in providing an excellent program, fine facilities, and warm hospitality at the 30th Annual Southern Research Conference in Agricultural Education."

10. A plaque was presented to Dr. Earl Webb, Texas A&M, recognizing him for distinguished service to the Research Conference throughout his professional career.

11. Chairman Cepica then called for any new business.

12. Charles Smith, Louisiana, discussed the possibility of the Conference sponsoring a research Journal. After a period of discussion, Smith moved that the Conference go on record requesting Dr. Ronald Brown, Editor of the AATEA Journal, to investigate the feasibility of expanding the AATEA Journal, identifying issue themes and soliciting more articles. Earl Webb, Texas, seconded the motion. Dale Oliver amended the motion by deleting the words "identifying issue theme." Ben Byler, Mississippi, seconded the amendment. Both the amendment and the motion as amended carried.

13. Dr. Ronald Brown, Mississippi, moved and James Key, Oklahoma, seconded that a committee be appointed to investigate the feasibility of changing the format of the Conference proceedings so that they would include the printing of a one page abstract of each presentation rather than the entire text of each presentation. The motion carried. Dale Oliver, Virginia, moved, and Ronald Brown, Mississippi, seconded that the committee consist of the Executive Committee. The motion carried.

14. The meeting was adjourned at 11:38 a.m.

Respectfully submitted,

Larry R. Jewell
Conference Secretary

Artilces of Agreement

SOUTHERN RESEARCH CONFERENCE IN AGRICULTURAL EDUCATION

ARTICLES OF AGREEMENT

ARTILCE I. NAME AND PURPOSE

The name of this organization shall be the Southern Research Conference in Agricultural Education. The general purpose is to:

1. Promote research and development in Agricultural Education in the Southern Region of the United States.
2. Provide, annually, a forum for presentation and discussion of research and development projects and proposals.
3. Provide communication among researchers in Agricultural Education within the region.
4. Assume responsibility, through action of the Chairman of the conference, for compiling an annual report of research completed and in progress in the region and coordinate this with the National effort.
5. Have conference proceedings published by the host institution and distributed to each participant, each head teacher educator, and each head supervisor in the Southern Region and the ERIC system.

ARTICLE II. MEMBERSHIP

Any person working in Agricultural Education within the region and interested in research and development relating to programs in Agricultural Education is eligible for membership in the conference.

No dues are charged. A registration fee, set by the Steering Committee, will be collected at the annual meeting to help defray costs of the conference and other expenses of communicating with members.

The Southern Region for this conference includes the following states and territory:

Alabama
Arkansas
Florida
Georgia
Kentucky
Louisiana
Puerto Rico
Mississippi
North Carolina
Oklahoma
South Carolina
Tennessee
Texas
Virginia

ARTICLE III. ANNUAL MEETING

The Chairman will be from the host state. The Annual Meeting will be held at a university, or at a place chosen by the chairman of the conference, the host institution will be designated by the chairman.

The place of meeting will be determined at least a year in advance.

The dates and length of the meeting will be determined by the Agricultural Education staff at the host institution, in cooperation with the Steering Committee of the Conference. The dates will be set and announced at least ten (10) months in advance.

The program for the Annual Meeting will be the responsibility of the Agricultural Education staff at the host institution, in consultation with the Chairman of the Conference. It is recommended that specific suggestions for the program be solicited from the membership in the region.

At least one Business Session will be scheduled and held during the Annual Meeting.

ARTICLE IV. OFFICERS

The officers of the Conference shall be as follows: Chairman, Chairman-elect and Secretary. The Chairman-elect and the Secretary will be elected at the Annual Meeting. (If a Chairman has not been elected previously this position will also be filled) The Chairman-elect will become Chairman for the following year. The Secretary may be re-elected. New officers will assume office when elected at the Annual Meeting.

THE DUTIES OF THE OFFICERS WILL BE AS FOLLOWS: THE CHAIRMAN WILL(1) PRESIDE AT ALL BUSINESS MEETINGS OF THE CONFERENCE, (2) CALL MEETINGS OF THE STEERING COMMITTEE, (3) APPOINT COMMITTEES.

THE CHAIRMAN-ELECT WILL (1) PREPARE MINUTES OF BUSINESS SESSIONS, (2) COMPILE PROCEEDINGS OF THE ANNUAL MEETING FOR PUBLICATION BY THE HOST INSTITUTION, (3) PRESIDE AT MEETINGS IN THE ABSENCE OF BOTH THE CHAIRMAN AND CHAIRMAN-ELECT.

These three officers will serve as a Steering Committee for the Conference. They shall work with the host institution in planning the Annual Meeting and communicate with members as deemed desirable for promoting research and development in Agricultural Education within the Southern Region.

ARTICLES V. AMENDEMENTS

These Articles of Agreement may be revised by majority vote of the members at the Annual Meeting.

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These Articles of Agreement were adopted by the Southern Region Research in Agricltural Education at Business Session at Mississippi State Department July 26, 1979.